Implementing Business Process Automation Through Agile Project Management: A Case Study on Workload, Contracts, and Scheduling Systems.

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Author’s Presentation

I am an MBA2 candidate at ESLSCA Business School Paris, specializing in Project Management and Business Process Innovation. This thesis, titled *"Implementing Business Process Automation Through Agile Project Management: A Case Study on Workload, Contracts, and Scheduling Systems"*, represents the culmination of both my academic training and my professional experience during a strategic internship in the Academic Operations Department. With a strong interest in digital transformation, low-code development, and agile methodologies, I have focused my research on applying pragmatic automation solutions within higher education administration. This work reflects my commitment to combining analytical

rigor with real-world impact, and I hope it contributes meaningfully to the evolving conversation around operational efficiency in education.

Acknowledgements

I would like to express my deepest gratitude to my thesis supervisor, [Supervisor's Name], for their guidance, encouragement, and critical feedback throughout this research. Their expertise and availability were invaluable in shaping both the theoretical and practical dimensions of this project.

My sincere thanks go to the Academic Operations Team at ESLSCA Business School Paris, who not only welcomed me into their daily operations but also actively collaborated with me during the development and testing of the automation tools. Their insights, openness to innovation, and constructive feedback were essential to the success of this work.

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Abstract

This thesis explores the implementation of Business Process Automation (BPA) through Agile Project Management in the context of academic administration at ESLSCA Business School Paris. Focusing on three core administrative processes—faculty workload planning, contract generation, and budget forecasting—the research identifies systemic inefficiencies caused by manual workflows and fragmented data systems. A mixed-method case study approach was adopted, combining qualitative interviews with

quantitative performance analysis. Using VBA-based automation tools, each process was redesigned and deployed iteratively, guided by Agile sprints and user feedback. Results indicate significant improvements in time efficiency (70–85% reduction), accuracy (80–95% error reduction), and user satisfaction. The research concludes that low-code BPA, when implemented with stakeholder engagement and iterative delivery, can deliver measurable benefits and catalyze cultural change in educational institutions. The study provides a replicable framework for future automation initiatives in higher education.

Keywords: Business Process Automation, Agile Project Management, Higher Education, VBA, Administrative Efficiency, Workload Planning, Contract Automation, Budget Forecasting

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GENERAL INTRODUCTION

1.1 Situational framework and Motivation

This pressure to become more modernized, more efficient, and less susceptible to human error and lagging behind rapidly changing academic and administration needs is being felt in the ever more digital landscape of higher education as of late and many institutions have become apprehensive about improving efficiency rates and harmonizing their internal processes. Although most of the progress when it comes to education and teaching has been directed towards digitalized levels of learning and the student-oriented services, there is, however, another area that ought to be equally automated, that area is the academic administration. Technical tasks like division of work among the faculty, scheduling courses and the production of contracts are all in still relying heavily on manual data feeds, manipulations in spreadsheets and discontinuous Word document templates. This creates inefficiencies, delays and results in greater operational risks to the institutions.

These administrative bottlenecks have increasingly come to the fore at ESLSCA Business School Paris, the highly-regarded independent institution that operates a wide variety of business education courses. It is complicated by the school coming with a modular curriculum, multilingual teaching

personnel, multi-diversification of the program and much documentation required. Each year, the academic affairs department has to create tens of individual contracts, calculate teaching workloads and appointments per instructor and make sure that teaching activities are aligned with teaching assignments and academic workload, ECTS credits and institutional internal budgeting. Undertaking these procedures manually wastes a lot of staff time, not just that, chances of disparity, loss of information and eventual lapse of communication would rise.

Against this background, this thesis deliberates Business Process Automation (BPA) can be successfully adopted using the methodology and practices of the Agile Project Management (Agile PM) to enhance these solutions to core administrative systems. The term BPA is used to mean the application-of-technology to automate repeat, rules-based tasks otherwise handled by human beings. Agile PM is a software development framework that was very popular, then gradually adapted by industries that require flexibility, adaptability, and collaborative problem-solving qualities.

The study lies in a real-life case study: an internship project of the author at ESLSCA Business School Paris in 2024-2025. The main aim of this project was to automate three key academic processes including:

1. Workload Planning- Planning and controlling the rates of the teaching hours per instructor within the programs and semesters.
2. Contract Generation-Generation of customized faculty contracts in regard to individual assignments, language directions, and remuneration rates.
3. Academic Budget Forecasting - A summarising of program expendits and workloads quantity to be used in planning and administration.

The project used Microsoft Office VBA (Visual Basic for Applications) scripts, tracking into Excel and Word in order to automate these operations. These scripts allowed real time data pulling, dynamic filtering systems, conditional logic and creation of output between files within the system. The method adhered to Agile principles including incremental delivery, unremitting feedback by the stakeholders, division into modules, and ability to respond to changes.

Hence, the present work is not only a technological look at BPA but also its strategic managerial tool made possible by Agile approaches. It takes into consideration the design, management, evaluation and expansion of automation in a cost-effective, non-disruptive way, which is not only sensitive to the demands of the institution but also to the needs of its academic employees.

1.2 Objectives of research

The general aim of the present thesis is to review the possibility of Agile Project Management to support the planning and execution of Business Process Automation in academic setting. The purpose of the research is to show that even such a multi-purpose web technology like BPA can become the tool to enhance the work of academic administrative procedures greatly when the necessary planning and management are applied, and be still not out of reach by means of tools already present in the majority of institutions.

There are five research objectives the thesis is devoted to:

- Objective 1: To evaluate the existing pain points and inefficiencies of the manual academic administrative processes that happen in ESLSCA Business School.

- Goal 2: Ensure that Agile PM are used to custom-design and implement BPA solutions implemented in VBA scripting in Excel and Word.
- D. Objectives 3. To assess the effectiveness of the developed BPA tools in terms of time saved, reduction of errors, level of satisfaction of the stakeholders.
    - Objective 4: Analyzing the organizational and managerial implications of adopting BPA- the analysis of organizational and managerial implications of adopting BPA in an academic setting.
    - Objective 5: An objective to give long term advisory guidance on the scalability, enhancement as well as governance in the system of BPA in the agencies of learning institutions.

By achieving these goals, the thesis will help in one way (as it provides working systems) and another way (as it puts BPA implementation efforts in the context of Agile PM methodology and best approaches to change management).

1.3 Scope, and delimitations

This study will be limited to academic process automation by one institution namely ESLSCA Business School Paris. Although the described tools and techniques may also be more broadly applicable, the three areas of administration chosen by the empirical element are the following:

1. Automation of workload Planning

Through an Excel VBA, extracting, summarizing and validating teaching hours by semester, by instructor and by program.

2. Contract Automation System

Automatic formation of contract by means of form selection of professors and document templating in word using VBA.

3. Automation of Budget Forecasting

Combining academic course work data to generate financial and operational projections in dynamic excel dashboards.

The automation scripts that will be developed in the course of the internship are very specific to the structure of the school, its data architecture, and workflow solutions. Accordingly, although they are as evidence of concepts they might not be essentially changed over to other organizations after a direct implementation.

Moreover, the study does not propose replacing Enterprise Resource Planning (ERP) systems, Learning Management Systems (LMS), but offers to offer lightweight and transitional automation tools with common household technologies such as Microsoft Office. The study is limited as well in that it does not include automation or classroom teaching (e.g. grading, attendance), but rather is about improving work among the staff.

Speaking of methodology, the present thesis uses both quantitative and qualitative data. The qualitative information is then identified based on the project logs and stakeholders meetings and the Agile sprint reviews. Some of the quantitative information is the number of hours saved, decrease in document errors, and efficiency measures before and after automation.

1.4 Structure Thesis

Part I: Analytical Framework and Literature Review

This part outlines the theoretical background of the study by examining some important terms and frameworks used in Business Process

Automation, Agile Project Management and business change. It consists of three chapters:

Chapter 1 studies the emergence of BPA in the education sector focusing on the problems of process inefficiencies and low-tech automation tools.

Chapter 2 is devoted to the Agile methodology and ways to implement it in other areas than software development particularly in the redesign of administrative processes.

In Chapter 3, it is provided that conceptual framework will be introduced to connect theory with practice such as process design thinking, stakeholders' analysis, and hypothesis development.

Part II: Empirical study

The thesis is based on the central part that consists of the empirical study of automation at ESLSCA Business School Paris. There are five chapters in it:

Chapter 4 establishes the issues that automation is trying to work out and puts it in the context of the academic set up of the school.

- The chapter 5 defines the research methodology in terms of how the data will be collected and the course of system building.

Chapter 6, 7 and 8 are each devoted to the design, implementation and results of each of the three BPA tools used (Workload, Contracts, and Budgeting).

Part III: Recommendations and Findings

The conclusion draws together results of the empirical research and offers the plan that can help to improve the process further and scale it.

Chapter 9 will discuss the effects of automation tools, success factors affecting the adoption as well as the challenges during implementation.

Chapter 10 puts forward strategic considerations on institutionalizing BPA by instituting training, change management and gradual upgrading of the system.

 Chapter 1: Higher education Business Process Automation

1.1 Context of the research and reasons behind it

Globalization, regulatory pressure, competition, digitalization, and operational efficiency are creating a level of complexity unprecedented in higher education institutions (HEIs) that is causing pressure on performance. In this regard, the administrative aspect of HEIs - faculty contracting, course planning, workload, and resources distribution among others have turned out to be both fundamental and exceptionally tough to manage manually. Although pedagogical innovation and digital learning has received a lot of scholarly interest, back-office academic digitalization has received little attention. In this chapter, the phenomenon of Business Process Automation, (BPA) will be introduced, its applicability in the education context examined, including the challenges faced, tools used by various institutions as well as its effects especially in the context of administrative activities like those conducted by ESLSCA Business School Paris.

At most institutions of higher learning, the essence of the mission, education and research, tends to hide the critical tasks performed behind the scene. The registrar responsibility, course scheduling, teaching assignment coordination as well as faculty contract management are the support functions which have been considered as administrative overhead but not strategic support. But the challenge of higher enrolment, the need

to diversify curricula offerings, and the looming demands of the students and regulating bodies alike have wrought enormous stress to these systems themselves. The things haven changed, where auditable agility and accuracy are pre-conditions to growth and reputation, manual processes, however, are no longer tenable. Business Process Automation (BPA), which used to be the prerogative of a corporate enterprise, has proved to be suitable to process streamline operations of academia, manual workload, as well as increasing the responsiveness of the institutions.

BPA is defined as applying technology to the repetitive tasks or processes involved in a company that one can use instead of manual labor in reference to Josyula, Suresh, & Raghu Raman (2023). The main purpose of designing these systems is, of course, to make operations more efficient but also consistent to minimize the error rates and facilitate data-based decision-making. Within the administration of higher education, BPA solutions have the ability to automate many processes which might include assigning teaching obligations, the dispensation of standardized and also contracts, budget estimates, evaluation, and even even accreditation reporting. Although the possible effect might be huge, introduction into academic environments is usually held back or even prioritized because of the financial issues, cultural intolerance to new phenomena, and misunderstanding that the automation process implies loss of human control or a loss of a position.

However, innovative organizations have already started adopting low-code and no-code robotic technologies, and especially those that can be easily interfaced with established Microsoft Office environments. VBA, Power Automate, or SharePoint based solutions are particularly appealing due to the possibility to perform the process automation without significant investments into enterprise-level software. These tools are not only economical but also adaptable to a local departments so that they are able

to adjust the tools at sequential intervals without using IT bottlenecks. This is why BPA is particularly applicable to schools such as ESLSCA, where the cost-effective innovation has to be combined with the intricacy of the operation.

Another area to which the implementation of BPA in the administration environment should be related is the management of change. Technical capability is only as important to successful adoption as user trust, training, and an iterative design often are. To be sustainable, BPA should not substitute, but augment the human knowledge encapsulated into academic procedures. Automation of redundant work will allow administrative professionals to dedicate their efforts to more valuable tasks like coordination with the stakeholders, development of policy, and ensuring quality. The nexus between BPA and academic administration is not only a technical problem as will be discussed in the sections below, but it is also a strategic opportunity. It is a development trend toward a more intelligent and nimble institution, in which academic mission would be supported and scaled with the help of digital tools.

1.2 Business Process Automation (BPA) definition

Business Process Automation is the process of utilizing technology and using it against those processes or repetitive jobs in business that enable a human effort to be converted to an automated effort. It entails design of processes, their implementation and automation through software application that simplifies everyday operations and saves time, enhances accuracy and accountability (Davenport & Short, 1990). BPA is usually regarded as a stage on the way to complete digital transformation since it

can be viewed as an intermediary between manual work and higher-end enterprise-level systems, such as ERP systems or combined cloud-based systems.

BPA also differs with business process improvement or reengineering as it lays more emphasis on efficiency by automating business processes whose original form may not have been changed dramatically. Whereas Business Process Reengineering (BPR) tries to redefine everything, BPA tries to make the most out of what is out there by digitalizing the way of how it will be done. On the college level BPA is one of the least demanding, but effective ways of modernization of higher education entities that cannot afford a radical IT modernization due to financial constraints or just technical incompetence.

1.3 BPA in the higher education

At most universities and business schools, administrative systems continue to support academic planning, contracts with the faculty, budget planning, schedule and work utilization all on a basis of manual spreadsheets, paper-based workflow and email as communications. Although Learning Management Systems (LMSs) have been adopted in the process of delivering courses, the systems, which preside over the process of teaching logistics, resources, and instructor remuneration, are still fragmented.

Such dependence on semi-manual systems presents the following issues: duplication of data, lack of consistency, high possibility of human error, waste of time, less transparency and poor scale-ability. With the expansion and diversification of educational institutions, which has resulted in multiple programs, in different languages and on varying modalities (on-line, face to face or hybrid), the administrative load is exponentially magnified. BPA in this situation therefore appears as an effective and

scalable technology of creating less friction in operations and improving the administrative responsiveness.

According to a report by EDUCAUSE (2022), administrative modernization is among the leading strategic priorities that higher education institutions should adopt after the pandemic. BPA is claimed in support of operational dynamics and flexibility, particularly within institutions, that want to be competitive and responsive. Besides, the European University Association (EUA) indicates that data integration and digital workflows are the building blocks of the new academic governance, which is part of BPA.

1.4 Processes Categories that can be Automated within HEIs

Automation is most likely to occur in processes with certain qualities: the process has to be repetitive, composed of rules, have high volumes, and have well defined inputs and outputs. There are numerous of those processes in higher education. Based on one of the available taxonomies drawn up by Khosrow-Pour (2021), automation in HEIs can fall into the following categories:

- Academic Planning: Course scheduling, room assignment, assignment of faculty
- Human Resources: On boarding, contract formations, timekeeping
- Financial Management: Budgeting, tracking, expense projection
- Student Services: Admission application, transcripts and changing academic records

Reporting and compliance: Accreditation documentation, preparation of audit, regulatory reporting

This thesis deals with the three most important processes of the academic administration that should be automated: (1) faculty workload planning, (2) contract generation, (3) budgeting/scheduling coordination. The reason is that these were chosen as applicable to the needs of the operations at ESLSCA and that they hold a strong possibility of making a difference using lightweight automation.

1.5 BPA Tools and technologies

Technology support systems of BPA include a variety of layers, basic scripting support, and enterprise-level systems. On the low-code/no-code end, tools, such as Microsoft Office VBA, Google Apps Script, and Zapier enable one to develop their own automation systems within established software environments. Intermediate solutions take the form of Business Process Management Systems (BPMS) such as Nintex, Process Maker, and Kiss flow. On the expensive end of the continuum, comprehensive and integrated process automation may be purchased in an ERP suite, e.g. SAP, Oracle PeopleSoft and Workday, often at high cost and long implementation duration.

Microsoft Excel and Word and the VBA scripting are the chosen tools in the case of ESLSCA Business School. Such a decision was made on the basis of four main criteria:

1. Availability: The available tools remain familiar to the staff, and there are no licensing nor deployment concerns.

2. Flexibility: VBA is very customizable with no high level knowledge of programming required.

3. Integration: It will be simpler to automate an existing process that is already being performed using Excel and Word files as the de facto “system”.

4. Cost-efficient: There is no possibility of investing in external software or IT framework as a consequence of using VBA.

1.6 Advantages of BPA on Educational Administration

What can be seen is the strategic value of BPA in academic institutions in many dimensions of performance:

• Time-saving: The automated processes simplify and save time on completing the repetitive tasks that can usually take over 50% of time (Gartner, 2021).

• Precision: Formula-driven automation reduces the chance of a human error in calculations or transcription of data.

• Scalability: BPA makes it so that systems can scale (add more students, more faculty, more programs) without a corresponding amount of extra work.

• Transparency: Process logs, automatic documentation and version control allow auditability and internal control.

• Staff Morale: Automation of the mundane work enables the staff to take up more valuable work such as planning, communication and support.

In ESLSCA, when the manual compilation of contracts between faculty and the school was replaced by automated input into form-driven Word templates, the percentage of accuracy in names, hours and rates of payment increased tremendously. Likewise, workload dashboards which ran and were done using excel were used to replace the de-centralized planning documents that gave centralized workloads on the distribution of teaching programs and semesters.

1.7 Academia barriers and challenge to BPA

Although there are advantages, BPA does not come without its limitation and obstacles. The typical problems, caused by this physical condition, noted both in literature and practice refer to:

- Resistance to Change- Staff and faculty can feel threatened by automation as to their jobs or as loss of independence.

- Data Quality Problem: Automations present data-quality problems of their own. Automation scripts that have been carefully designed may be ruined because of inconsistent data entry formats, empty fields, and outdated records.

- Lack of IT Support: Smaller departments or institutions will not be able to afford technical personnel to construct, maintain or fix automated systems.

- Security and Privacy: The automation of the data of personnel including contracts and workloads is a crucial question of the data protection according to regulations like GDPR.

- System Fragmentation: System fragmentation is the kind of situation found in institutional environments where a variety of systems that are not linked together to be the case (e.g., excel files, email, threads, SharePoint, etc.). The integration of automation in this case can lead to brittle solutions except that there is a larger IT strategy involved.

Change management and stakeholder participation are essential in order to meet these challenges. One method of approaching this is agile methodologies, which are described in the following chapter and encourage incremental development, involvement of end-users and the flexibility in requirements gathering.

1.8 BPA and Lean Thinking to Education

The other notable theoretical lens in regard to BPA is Lean thinking. Lean concepts were originally adapted on the manufacturing industries (Womack & Jones, 1996) but today these principles have been incorporated in other industries such as education. Lean BPA emphasizes getting rid of waste, minimizing variability and adding value to the internal stakeholders (e.g. faculty, staff, administrators).

In this context, wastes involve:

- Over production (the production of more than necessary documentation),
- Overprocessing (repetitive approvals or formatting),
- Waiting (awaiting signatures, approvals or clarifications),
- Defects (contracts or schedules errors),
- Movement (looking in unorganized files).

The BPA systems that were introduced in the ESLSCA resolved such inefficiencies directly, making the process of creating contracts digitalized, connecting the templates to the structured datasets, and minimizing version confusion. So, somehow, BPA could employ Lean philosophy by implementing it not on cultural change but on software logic. In order to better frame the significance of this study, it is appropriate to mention the fact that, organizations such as ESLSCA are now being presented with the possibility of modernizing operations because of the pressure being exerted on them both by internal and external stakeholders. On the internal side, academic personnel and administrative workers need more efficient tools to handle increasing levels of administrative work, especially as programs become more heterogeneous, and accreditation standards change. On the external front transparency, efficiency and responsiveness are expected by

regulatory agencies, corporate partners and potential students. Automation of the internal processes can no longer be considered as a luxury, but a must in this climate. There is a middle way that does not require great financial ability like developing an enterprise system but can be quite flexible, affordable and very customized, such solutions are found in internally developed BPA applications.

The second source of motivation of this study is the existence of a gap between theory and practice in numerous institutional improvement programs. Although management literature usually sells strongly the concept of digitization and Lean practices, the same concept fails to become a reality because it is not owned or is incorrectly managed or even does not correspond to the needs of the users. The thesis will take an applied perspective, and feel that it is part of the everyday lives of an academic institution, and attempts to fill that space. The method is thus institutional and experimental albeit institutionally-driven and experimental in the sense that it is utilizing the Agile concepts on a non-software development context.

Moreover, this research also highlights the hidden potential of the preexisting tools, i.e. Microsoft Excel and Word that are almost omnipresent in academic world yet are practically unutilized in terms of their high-end automation. Meaningful changes initiated by using VBA scripting on environment known to users can be conducted through this project by showing how no further licensing and/or infrastructure is necessary. This is specifically applicable in the post-COVID-19 environment, where cost-cutting and the necessity to become digital resilient made resourcefulness more critical in the management of institutions.

Lastly, the thesis helps in the changing position of the administrative professional. Process design and digital transformation are the IT functions in most academic circles. Nevertheless, this initiative demonstrates that

administrators themselves can be change agents, engaging in approaches and available technologies to redesign the systems within which they operate every day, in iterative processes. With regards to this, as the researcher did research in the dual role of an intern and an analyst, they found themselves in a very special position to traverse technical and organisational challenges.

The larger lesson is that institutional reform is most frequently at its most effective when effected in-house; when it has been led by those who are up-close and personal with the problems, the rhythms and the relationships of academic life. This project is expected to encourage reconsideration of the process improvement within other equivalent institutions; however, not as a single large-scale restructuring effort, but a continuous process that can be viewed as a journey of process improvement and a periodical and incremental humanistic redesign.

□ Chapter 2: Agile Project Management in Digital Transformation

2.1 Scope and Orientation of the Literature

The dynamic, uncertain, and rapidly evolving nature of digital transformation projects in both public and private sectors has brought forward the need for adaptive, human-centered, and iterative management methodologies. One such methodology that has gained wide acceptance beyond its original roots in software engineering is **Agile Project Management (Agile PM)**. Originally conceptualized to accelerate software delivery while improving responsiveness to customer needs, Agile principles have been successfully adopted across various sectors, including healthcare, banking, public administration, and increasingly, education. In the context of this thesis, Agile PM provides a practical and theoretical framework for planning, executing, and iterating the development of

Business Process Automation (BPA) systems within an academic administrative setting—specifically, at ESLSCA Business School Paris.

Unlike traditional project management approaches that are linear and sequential—commonly known as “Waterfall” models—Agile offers a flexible, cyclic, and incremental method of managing work. It is particularly useful for environments characterized by evolving requirements, limited technical support, and active stakeholder involvement, as is often the case in administrative departments of educational institutions. This chapter discusses the core principles of Agile PM, its methodologies (particularly Scrum), its adaptation for non-software projects, and its relevance in academic settings like ESLSCA. It also sets the stage for how Agile was practically used to develop and deploy the workload, contract, and budgeting automation tools detailed in later chapters. Certainly. Below is a seamless 400-word extension to the original content you provided, expanding on Agile Project Management's relevance, theoretical underpinnings, and institutional application—particularly in academic environments like ESLSCA:

Agile Project Management is underpinned by the Agile Manifesto, which emphasizes **individuals and interactions over processes and tools**, **working solutions over comprehensive documentation**, **customer collaboration over contract negotiation**, and **responding to change over following a plan**. These values are operationalized through 12 guiding principles that stress continuous delivery, stakeholder feedback, adaptive planning, and cross-functional team collaboration. What makes Agile particularly compelling for academic administration is its ability to **embrace change as a constant**, rather than as a risk to be minimized. In higher education institutions where administrative processes are often non-standardized, frequently interrupted by regulatory updates, and heavily

influenced by human input, Agile provides a structure for making progress even when all variables are not fixed at the outset.

Within Agile PM, **Scrum** is the most widely adopted framework and was used as the guiding methodology throughout the development of the BPA tools in this thesis. Scrum breaks down complex work into manageable sprints—short, time-boxed periods of activity that produce tangible outputs or “increments.” Each sprint begins with **planning**, proceeds with **daily collaboration and task execution**, and ends with a **review and retrospective**. This iterative cycle allowed the project team at ESLSCA to regularly validate outcomes with users, refine features based on real-time feedback, and pivot when necessary. The use of a visual task board and product backlog also helped prioritize features and distribute tasks evenly, making the project transparent and trackable despite its modest resource base.

Moreover, Agile PM fosters a **culture of continuous improvement and learning**, which aligns well with the ethos of educational institutions. By inviting academic and administrative staff to act as stakeholders rather than passive recipients, Agile encourages shared ownership of outcomes. This collaborative orientation not only reduces resistance to change but also uncovers tacit knowledge that might otherwise remain undocumented. For instance, during the sprint retrospectives, staff at ESLSCA contributed crucial insights about data formatting, naming conventions, and mutualized course structures that directly improved tool usability.

Finally, the implementation of Agile PM in a non-software, administrative context highlights its **methodological adaptability**. Rather than applying Agile dogmatically, the project team tailored its practices to the realities of a higher education setting. This included lengthening sprint durations to accommodate academic calendars and reducing the frequency of check-ins to respect time constraints. In this way, Agile was not just a framework for

delivery—it became a **mindset for collaborative problem-solving**, laying the groundwork for future process improvements beyond the scope of this thesis.

Agile Project Management is underpinned by the Agile Manifesto, which emphasizes **individuals and interactions over processes and tools**, **working solutions over comprehensive documentation**, **customer collaboration over contract negotiation**, and **responding to change over following a plan**. These values are operationalized through 12 guiding principles that stress continuous delivery, stakeholder feedback, adaptive planning, and cross-functional team collaboration. What makes Agile particularly compelling for academic administration is its ability to **embrace change as a constant**, rather than as a risk to be minimized. In higher education institutions where administrative processes are often non-standardized, frequently interrupted by regulatory updates, and heavily influenced by human input, Agile provides a structure for making progress even when all variables are not fixed at the outset.

Within Agile PM, **Scrum** is the most widely adopted framework and was used as the guiding methodology throughout the development of the BPA tools in this thesis. Scrum breaks down complex work into manageable sprints—short, time-boxed periods of activity that produce tangible outputs or “increments.” Each sprint begins with **planning**, proceeds with **daily collaboration and task execution**, and ends with a **review and retrospective**. This iterative cycle allowed the project team at ESLSCA to regularly validate outcomes with users, refine features based on real-time feedback, and pivot when necessary. The use of a visual task board and product backlog also helped prioritize features and distribute tasks evenly, making the project transparent and trackable despite its modest resource base.

Moreover, Agile PM fosters a **culture of continuous improvement and learning**, which aligns well with the ethos of educational institutions. By inviting academic and administrative staff to act as stakeholders rather than passive recipients, Agile encourages shared ownership of outcomes. This collaborative orientation not only reduces resistance to change but also uncovers tacit knowledge that might otherwise remain undocumented. For instance, during the sprint retrospectives, staff at ESLSCA contributed crucial insights about data formatting, naming conventions, and mutualized course structures that directly improved tool usability.

Finally, the implementation of Agile PM in a non-software, administrative context highlights its **methodological adaptability**. Rather than applying Agile dogmatically, the project team tailored its practices to the realities of a higher education setting. This included lengthening sprint durations to accommodate academic calendars and reducing the frequency of check-ins to respect time constraints. In this way, Agile was not just a framework for delivery—it became a **mindset for collaborative problem-solving**, laying the groundwork for future process improvements beyond the scope of this thesis.

2.2 Evolution and Core Principles of Agile Project Management

Agile emerged in 2001 through the **Agile Manifesto**, a seminal document drafted by 17 software developers who sought an alternative to cumbersome project management methods. The manifesto emphasized four core values:

- **Individuals and interactions over processes and tools**
- **Working software over comprehensive documentation**
- **Customer collaboration over contract negotiation**

- **Responding to change over following a plan**

These values were supported by twelve guiding principles that emphasized early delivery, continuous improvement, sustainable development pace, and regular reflection. Although originally written for software development, the Agile Manifesto’s values are universally applicable to any domain that requires creative problem-solving, frequent feedback, and iterative delivery.

Agile PM is characterized by **iterative planning**, **short delivery cycles (sprints)**, **collaborative team structures**, and **flexibility in adapting to change**. Agile assumes that projects will evolve over time based on feedback, lessons learned, and changing priorities. For this reason, Agile is well-suited for environments where the desired outcomes are known, but the path to achieving them may shift.

Agile teams are typically cross-functional, self-organizing, and empowered to make day-to-day decisions. A central idea is that value is delivered incrementally, in short bursts of development or execution cycles, which are immediately tested and validated with stakeholders. This drastically reduces risk and improves alignment with actual user needs.

The emergence of **low-code and no-code platforms** has also significantly impacted the field of Business Process Automation. According to Mendling et al. (2018), the democratization of process modeling and scripting enables non-technical users to actively participate in automation projects. This is particularly relevant in academic environments, where administrative personnel may lack programming backgrounds but possess deep domain knowledge. Tools like Microsoft Excel VBA, Power Automate, and Google Apps Script exemplify how process automation can be implemented with minimal technical overhead. These tools support rapid prototyping, cost-efficiency, and customization—key drivers of BPA in resource-constrained institutions.

Furthermore, studies on **digital transformation in higher education** suggest that while technological tools are readily available, their successful adoption often hinges on organizational culture and change management practices (Gigliotti, 2020). Academic institutions, by nature, are decentralized and governed by academic freedom, which can make top-down digital mandates difficult to implement. Agile project management, with its emphasis on stakeholder collaboration and iterative feedback, presents a more culturally compatible method for change. This compatibility is reinforced in the case of ESLSCA, where Agile practices allowed administrative teams to adapt incrementally, reducing resistance and promoting internal ownership of BPA tools.

In addition to the Agile framework, several scholars emphasize the importance of **Design Thinking** and **User-Centered Design** in BPA projects (Brown, 2009; Stickdorn et al., 2018). These approaches advocate for co-creating solutions with end users rather than for them, a principle mirrored in the thesis' internship-based methodology. The combination of Agile and user-centered design leads to more usable and accepted solutions, as users feel involved and valued throughout the process.

There is also growing attention to **data governance and process integrity** in BPA literature. Automated systems are only as reliable as the data that feeds them. According to Davenport and Redman (2020), successful BPA requires a parallel investment in data cleaning, validation, and consistency standards. This insight was particularly relevant in the ESLSCA project, where inconsistencies in course codes, faculty names, and mutualization tags presented obstacles to automation. Addressing these issues required not only technical fixes but also organizational alignment around shared data practices.

Lastly, the literature underlines the importance of **scalability and sustainability** in BPA implementations. Pilot tools that work well for one

department may not scale if they are not modular, well-documented, or integrated into broader systems. This aligns with the need for governance mechanisms to manage updates, user training, and cross-departmental usage. The ESLSCA experience suggests that even small-scale, VBA-based solutions can be made sustainable when paired with clear documentation, maintenance plans, and administrative champions.

2.3 Scrum: A Practical Agile Framework

Among the many Agile frameworks—such as Kanban, XP (Extreme Programming), and Lean—the most widely adopted in both technical and non-technical contexts is **Scrum**. Scrum provides a simple structure for organizing and managing work in small, cross-functional teams. It consists of specific roles, artifacts, and ceremonies that guide the project lifecycle.

Key roles in Scrum include:

- **Product Owner**: Represents the stakeholder or client, defines priorities, and manages the product backlog.
- **Scrum Master**: Facilitates the Agile process, removes blockers, and ensures adherence to Agile principles.
- **Development Team**: Carries out the work, whether it involves coding, writing, designing, or in this case, automating administrative workflows.

Key Scrum ceremonies include:

- **Sprint Planning**: Define what can be delivered in a short timeframe (typically 1–2 weeks).
- **Daily Stand-ups**: Short meetings to discuss progress, blockers, and plans for the day.
- **Sprint Review**: Showcase of completed work to stakeholders for feedback.

- **Sprint Retrospective**: Reflection on what went well, what didn’t, and what to improve.

Artifacts include the **Product Backlog** (a prioritized list of tasks), **Sprint Backlog**, and **Increment** (the working deliverable). In this thesis project, these concepts were adapted for administrative automation: tasks such as “create form for professor name selection” or “link budget data to teaching hours” were broken down into backlog items and managed through weekly sprints with the academic operations team at ESLSCA.

2.4 Adapting Agile to Non-Software Projects

Though Agile was born in the software industry, its adaptability makes it highly relevant to **process automation, system redesign, and organizational innovation**—especially in academic environments. Agile's emphasis on iterative work, stakeholder engagement, and adaptability resonates strongly with the real-world complexities of non-technical environments.

In the case of ESLSCA, the automation tasks were embedded within a traditional academic calendar, tight approval cycles, and minimal technical infrastructure. Applying Agile in this context required pragmatic adjustments. The following adaptations were made:

1. **Flexible Team Roles**: The intern (thesis author) assumed both the Scrum Master and Developer role, while the Head of Programs acted as the Product Owner.
2. **Sprint Duration**: Weekly iterations allowed for short feedback loops and adjustments based on supervisor input.
3. **Simplified Artifacts**: Trello was used to maintain the backlog and organize tasks visually. Excel checklists were used to track sprint progress and documentation.

4. **User Stories Instead of Technical Specifications**: Tasks were framed from the user's perspective. For instance, "As a coordinator, I want to generate a professor's contract in two clicks, so I can reduce errors and save time."

These adaptations demonstrate that **Agile is not bound to code—it is bound to mindset**. Even in non-IT environments, Agile allows for faster learning cycles, greater ownership, and more meaningful engagement with stakeholders. By breaking down work into deliverable chunks, Agile provided the structure to develop and refine the BPA tools in a resource-constrained but high-impact environment.

2.5 Benefits of Agile in Academic Process Automation

The use of Agile in automating academic processes delivers numerous benefits:

- **Stakeholder Engagement**: Regular feedback from academic staff and supervisors ensured that tools being developed were aligned with actual workflows and requirements.
- **Reduced Risk of Rework**: Because features were tested and validated in short cycles, the team could pivot quickly if an approach did not work as intended.
- **Improved Visibility**: Project tracking tools provided real-time visibility into task status, dependencies, and delivery expectations.
- **Faster Value Delivery**: Instead of waiting for a large "final version," features were released incrementally—allowing early adoption and partial use even before the entire system was complete.

In the case of ESLSCA, these benefits translated into **faster turnaround times**, **fewer errors in contracts**, and **greater satisfaction from administrative personnel** who were using the tools. Moreover, Agile

helped to create a culture of improvement and experimentation within a traditionally hierarchical administrative structure.

2.6 Challenges and Misconceptions in Applying Agile Outside IT

Despite its advantages, adopting Agile outside of IT departments is not without challenges. Several misconceptions can hinder its effectiveness:

1. **Agile Equals Chaos**: Some stakeholders equate Agile with a lack of planning or structure. In reality, Agile requires discipline, prioritization, and clear communication.
2. **Agile Is Too Fast**: Teams used to long planning cycles may resist Agile's quick turnaround expectations. The key is to communicate that sprints can be customized and are focused on learning, not perfection.
3. **Roles May Be Blurred**: In small teams, roles like Scrum Master or Product Owner may not be clearly delineated, leading to confusion. In this thesis project, this was addressed by defining roles explicitly in the kickoff phase.
4. **Resistance to Incremental Delivery**: Some organizations prefer "big bang" implementations. Agile requires educating stakeholders on the benefits of early delivery and feedback.

To mitigate these risks, the internship project included Agile orientation sessions, clear documentation of the backlog, and structured sprint reviews with decision-makers. This helped align expectations and foster trust in the process.

2.7 Agile as a Catalyst for Cultural Change

Perhaps the most powerful, though often understated, contribution of Agile is its ability to trigger **cultural change**. In academic administration, where tradition, formal hierarchies, and procedural rigidity are common, Agile introduces a new way of thinking. It emphasizes:

- **Empowerment** over command-and-control
- **Learning** over compliance
- **Transparency** over gatekeeping
- **Collaboration** over silos

These cultural shifts align well with the evolving expectations of modern higher education institutions, which must be agile (in the literal sense) to respond to student needs, accreditation changes, and technological disruptions (Macieira,2021). In the case of ESLSCA, Agile practices encouraged cross-departmental dialogue, allowed junior team members to contribute ideas, and gave end users a sense of ownership in the tools they would later use daily. This cultural empowerment was as important as the automation itself.

 Chapter 3: Theoretical and conceptual Framework

3.1 Underlying Principles and Brief Description

In order to frame the research in academic integrity and fill the disparity in theory and practice, the chapter provides the theoretical and conceptual framework in which the thesis is based on. Although earlier chapters have defined Business Process Automation (BPA) and explained how Agile Project Management (Agile PM) contributes to realizing it, in the chapter, all the academic models and principles that will be used to analyze, develop, and evaluate the automation tools presented later in the thesis will be outlined. Specifically, it is based on three fundamental areas, namely, (1) process management and reengineering theory, (2) stakeholder and change management theory, and (3) conceptual mapping in development of hypothesis. All these aspects make up the blueprint within which the case at ESLSCA Business School Paris can be comprehended, researched, and evaluated.

The effective theoretical framework will guarantee that the research project will not be based on anecdotal evidence or inspiration but will be based on the established models. In the meantime, the conceptual framework helps to change into working indicators the abstract ideas and linkage between literature and empirical investigation. The two together provide the intellectual scaffold in support of the thesis.

3.2 Theory of Process Management and Reengineering

Business Process Management (BPM) is the wider disciplinary background of BPA and it deals with the design, enactment, tracking and improvement of procedures that facilitate organizational performance. On a fundamental level, BPM operationalizes the perspective of organizations as a system of interdepedent processes, all of which transforms inputs to valuable outputs. Hammer and Champy (1993) define a process as a deliberate, quantified multiplicity of actions aimed at the creation of a given output to a special or chosen customer or marketplace. The process management therefore entails the identification of the inefficiencies, eradication of redundancies and enhancing the flow of activities to be more effective.

BPA can be regarded as one of tactical use of BPM, and its intent is limited to automation of tasks that are still being performed by human beings. Nevertheless, it is also in line with Business Process Reengineering (BPR) where the implementation depends on a redesign of the actual process, and not just automating the processes in the previous manner. Not only were some of the processes (the generation of a contract, calculation of a workload, etc.) automated in this thesis, they were also partially redesigned to remove redundant validations, minimize data entry, and bring standardization.

Main concepts in process management theory entail the flowcharts, SIPOC (Suppliers, Inputs, Process, Outputs, Customers) and process value

analysis. Such tools can be applied in an informal manner when the VBA scripts are developed in ESLSCA. As an example, it was found in the contract generation process that there are repetitive data checks as well as manual copy-pasting between files, suggesting a menu-structured form with dropdown and server-side data validation check. In that way, the introduction of BPA at ESLSCA was done somewhat along a process-centric approach to the issue, the aim being not only automation, but a rationalization and harmonisation of the processes underlying exchange.

One of the most essential aspects of Business Process Management is the philosophy of continuous improvement that does not have its equivalent in the one-time documentation of the processes. BPM promotes the use of a cyclical lifecycle of processes such as design, model, execute, monitor and optimize and is well suited to the iterative approaches through methodologies such as Agile. Echoing this lifecycle at ESLSCA reflected on the sprint cycles which were undertaken to build up the BPA tools. The development of tools and deployment were iterative, with learning cycles and feedback between the successive rounds of tools-supported iterations. This method represents the principle of process agility, which implies that the improvement is based not only on performance data but also on the understanding of the stakeholders.

Business Process Reengineering (BPR) in contrast to a typical BPM requires a more radical change of thinking. Whereas in BPM thinking is about getting small gains, in BPR, thinking takes place at a clean slate of entire workflows. In the case of ESLSCA, the generation of contracts was a process which opened up reengineering grounds as opposed to simply automating it. Initially, employees would copy the information about instructors, match them with teaching assignments manually, and paste in Word templates,which were not only redundant, but also presented many chances of inconsistency. Instead of duplicating this chain virtually, the

activity was revolutionised such that a source of centralised data delivery was utilised with auto filled templates so in effect this altered the manner in which contracts were created and filed.

Besides, process management theory laid its emphasis on identification and removal of non-value- adding activities. Some of these examples are found in ESLSCA where duplication of entries was found during the process mapping, revalidation of already approved teaching hours in another system, and reformat of spreadsheets. These activities were taking a great quantity of time without having a serious role to play in the quality of the academic achievements or the strategic objectives. By automating the elimination of the administrative staff, not only did efficiency increase but also the clerkship status became more like the co-ordinating and analytical.

Lastly, BPM and BPR models emphasize on stakeholder convergence as a source of sustainable change. Redesigning process must not be unconnected with individuals who are working and affected by the processes. Thus, opinions of both the coordinators, human resource individuals, and personnel involved in the finance department were taken at every level of automation development so that technologically sound and culturally agreeable workflow transformations were implemented so that the operations or ethos of the institution should not be inhibited.

3.3 Stakeholder and change management theory

There is no process automation project which can be completed effectively that does not overcome the human aspects of change. Some, L. (2023) argues that. Organizational change including the deployment of new tools and technologies can be executed according to project management. Automated decision-making in project management. the success of organizational change, and in particular, the introduction of new tools and technologies, must include systematic interaction with stakeholders. It

includes creating urgency, coalitions, development of a vision, communicating this vision powerfully, empowerment of people to take action, realization of short-term wins, institutionalization of improvements and entrenchment of changes in the culture.

The stakeholders involved in the case of ESLSCA were academic program managers, administrative personnel, contract coordinators and faculty members. The groups were diverse in their expectations, level of knowledge and openness to change. Although automation had a plethora of positive attributes like minimal workload and high levels of accuracy, it also disrupted the established habits and involved finer training in the beginning.

Stakeholder engagement was conducted on the simplified model based Freeman Stakeholder Theory (1984) that advocates the stakeholder engagement on considering the interests and the power of all parties involved either affected or not by a project. This thesis categorized stakeholders basing on the power and degree of influence. Prioritisation of backlogs and sprint reviews were done by key decision-makers including the Head of Programs. The users who are less influential but have a high level of participation in operations, like program assistants, were consulted during the testing and validation.

The project also allowed using stakeholders during the Agile sprints to manage resistance, be relevant, and provide useful feedback. This supports the idea behind the Change Model created by Lewin (Unfreeze-Change-Refreeze) where it is important to get people to participate in order to unfreeze pre-existing patterns of behavior and gain acceptance of new systems. The other issue in change management that should be given significance in this matter was the identification of emotional and psychological reactions and responses to automation. The idea of automating the functions which long had been done manually aroused a

diverse reaction, including excitement and satisfaction as well as uncertainty and fear. These are most likely to be captured in the change literature especially the work of Bridges (1991) who makes a difference between the technical aspect of change and the emotional aspect of transition. In ESLSCA, it was essential to have handled the two dimensions. Although the technical aspect of the change was the introduction of VBA tools, the personal aspect of the transformation was the development of trust, support of the intention behind the tools and the confirmation to the staff that the introduction of automation would not eliminate their jobs.

This psychological aspect was solved on the basis of the short-term wins approach developed by Kotter, where the first victories were actively demonstrated. As an example, when the workload planning tool functioned very well and was able to calculate teaching loads across programs in half of the regular time, this stage was celebrated in a sprint review meeting with all the stakeholders. This obvious success was used to reaffirm the worth of the automation project and contributed in a freeze-refreeze new behaviors, which were in line with the last stage of the Lewin model. This early success also created the momentum and the readiness of other departments to also join the initiative.

In going deeper with the Stakeholder Theory proposed by Freeman, the project group also carried out stakeholder mapping to determine interest and influence levels. This enabled the customization of communication strategies: decision-makers would be updated about the development on the progress and impact reports, whereas the operational team would be engaged in usability tests and training. This varied participation meant that each group of stakeholders was only presented with information that was befitting to their interests and decision making processes and therefore, where there was subtle confusion, cross collaboration was encouraged.

Last but not least, the deployment of Agile sprints inherently opened numerous possibilities of iterative involvement, which is a practical recommendation in participatory change management. Modifications did not become implemented in one large step, instead, every addition was slowly introduced and showcased, tested and polished with the aid of the user feedback. Not only did this prevent resistance, but also made the relevance and usability of the tools much greater, which confirms that successful automation is both a social process, and a technical process.

3.4 MVP Model and the Agile Theory

Agile in this project is not only a methodology but also a theoretical perspective through which adaptive and iterative change can be viewed. The concepts of systems thinking, complexity theory and Lean are borrowed in Agile. One valuable construct in Agile is the Minimal Viable Product (MVP) which says that teams should not wait till they have an ideal solution when they can deliver the smallest and, yet still useful solution to a system that delivers the fundamental value and then later refine it with user feedback.

The workload planning tool, the contract generator and the budget dashboard that were in the ESLSCA project were all in an MVP release, that means in their early releases, the tools had very basic functions and did not have any extra features. With such MVPs, it was also possible to test users and find the issues rather quickly and correct them later in subsequent sprints. The MVP process reduced rework practice, and more stakeholders felt confident in the process, and the time to value decreased.

The scope, time, cost triangle in the Agile was always in a balancing nature during the development. The scope was dynamic and changed with each sprint; time was minimized and fixed (one week sprints), and cost was almost zero because the tools were all existing. Agile theory at that we were

offered not just the structure, but also the philosophical grounds on which the project on the thesis presented works and has been created.

Empirical process control refers to one of the key principles of the Agile theory and it focuses on openness, inspection, and adaptation. The project was managed to this principle by the use of visible task board (Trello), sprint review, and real-time feedback loop. With these mechanisms, the team could respond swiftly to unexpected problems, like program calendars being out of sync with one another, or course code inconsistency, without having to disrupt the whole development process. The visibility of improvement and problems helped build accountability and strengthen the Agile ideology of people and interactions, in preference to processes and tools (Martino, et al (2025).

The MVP model was also a mitigation approach to risks. With the help of stripped-down versions of the prototype, the team could test core functionality in the actual conditions with minimum interference. This demonstrated the viability and gap of features before any further time was sunk into the expansion of them. Indicatively, the initial version of the budget dashboard had just the base lines of the budget and the hours by program. Some of the features such as soft skills allocation and mutualization flags were introduced in subsequent sprints based on feedback. This would make sure that all the additions were not assumptions but based on user needs which is part of the iterative value delivery by Agile.

Besides, applying the Lean principles, specifically the removal of waste and the provision of only the bare necessities, was especially relevant, considering the time and cost limit to the project. The Agile theory educates that excess engineering is unproductive, particularly in a setting with a low ability to absorb change. This was followed by the ESLSCA project which avoided the temptation of its team being too ambitious to create

complicated features in initial phases but settled on finding concrete pain points that were explicitly expressed. This cleanliness saved the overhead costs associated with development and raised the adoption rate since the user was not bombarded by needless sophistication.

This is because even the theoretical idea of continuous integration and deployment which originated in the field of software development affected the tempo of this work. Every sprint was followed by the working copy of a tool that could be instantly implemented and run in a real environment. This gave the project a sense of momentum, allowed stakeholder to see results and let small scale adjustments occur through the project timeline. By so doing, Agile theory was not only a delivery tool but also a thinking system that assisted in the decision-making, prioritisation as well as team coordination in the whole automation endeavour.

3.5 Conceptual Framework: A Connection between Theory and Research Questions

According to above-presented theoretical models, the following conceptual framework was built to administer the research:

- Input Variables: Complexity of an organization, manual operations, stakeholder roles, and digital readiness

Process Variables: Agile processes, sprint planning, automation tools (VBA) user participation

- Output variables: saving time, improvement of accuracy, user satisfaction, transparency of the process

It is based on the above relationships with these variables that the following research questions arise:

1. Just how much does Agile Project Management improve the construction and execution of Business Process Automation tools in academic administration?

2. What are some of the tangible and intangible advantages of automation of workload planning, contract generation and budgeting systems?

3. Which obstacles to the implementation of automation can be observed in an academic staff team and how can it be solved with the help of iterative development?

4. Do low-code BPA solutions such as VBA have the potential to scale to large-scale ERP in education?

All these questions are theory-informed, as well as realities in the eyes of the institutions observed. The conceptual framework, therefore, supports interrelation between abstract models (Agile, Process management and stakeholder engagement) and specific research activities (interviews, VBA development, testing).

3.6 Development of Hypotheses

The hypotheses adopted in relation to the research questions were as follows:

- H1: The use of agile project management allows the development of BPA tools faster and more user-oriented than the conventional method.

- H2: The introduction of BPA minimizes the administrative workload greatly in preparation of contracts, scheduling of work, and academic budgeting.

H3: Acceptance and usage of BPA tools is greater with stakeholder involvement of the development process.

- H4; Scalable automation and low infrastructure expenditure are qualities that can be provided by low-code solutions like VBA.

Such hypotheses will be confirmed or dismissed following a mixed-method, where qualitative stakeholder post-factum feedback will be required alongside quantitative information on log data to monitor system use and comparative time-efficiency rates. In a bid to bring more conceptual support to this study, it would be worthwhile anchoring the thesis within a larger socio-technical construct of the socio-technical systems theory. This theory assumes that the organizational performance is a result of the co-optimization of the social (people, roles, culture) and the technical (tools, processes, infrastructure) systems. At ESLSCA Business School Paris, computerization of the fundamental activities of the school was not so much a case of writing scripts or coming up with digital versions of forms. It involved a careful combination of user behavior, current work flows and institutional limitations. With implementation of this theory, the project resonates with the thought that any improvements made technically should be inbuilt in a human understanding and interdependence eco system in order to emerge with sustainable value.

The other applicable theory is the Technology Acceptance Model (TAM) introduced by Davis (1989), which emphasises the perceived usefulness and the perceived ease of use as the two substantial paths of predicting whether users will take up new technology. The model is especially applicable to the case of low-code automation tools such as those created in this thesis. By deciding to create BPA solutions within Excel and Word platforms, which staff were already used to, the level of both perceived ease of use and immediate usefulness also occurred. Consequently, the obstacles of

adoption were reduced with or without integration and training in arterial systems.

Dwelling upon expanding the basis of Agile Project Management, it would be beneficial to discuss the extent to which the Scrum framework can be applied to the academic context in particular. The Scrum encourages iterations (sprints) that are time-bound, cross-functional teamwork, and continual feedback, all of which were necessary in the internship project. Under the traditional academic administration approach, change processes are bureaucratic and more linear. Nevertheless, dynamic decision-making and tool advancement in phases were possible in Scrum. The process of continuous feedback and co-creation in the improvement of the process was reinforced by user stories and sprint reviews, which invited direct participation of the non-technical staff. This collaborative attitude did not only enhance the relevance of the tools but also instilled a common sense of ownership over the tools by users.

According to the Business Process Management (BPM) theory, the given thesis could be put into terms of BPM lifecycle: design, modeling, execution, monitoring, and also optimization. The BPA tools elaborated in the course of this work are equivalent to the phase of implementation, however, they also allow ensuring the monitoring stage with built-in dashboards and summary screens. In addition, the idea of continuous optimization through Agile sprints offered an intermediary between the BPM and Agile principles. Such a combination of models BPM and Agile permitted to flexibly automate processes, but still on the basis of institutional reality.

Finally, the study is in line with the topic of organizational learning according to Argyris and Schon (1978). Each of the sprint retrospectives, user feedback meetings, and iteration established a learning experience, not just to the developer, but to the administrative team as well. This recursive learning laid a foundation to do continuous improvement more

with the fact that BPA is not a one-off exercise but a learning process. One should mention the fact that the staff started urging to use new automation cases at the later stages of the project which proves the emergence of the more innovative than before and involved administrative culture.

4th Chapter: Problem Analysis and Project Background

4.1 Problem Area Framing

Good administration is of utmost importance as far as successful higher education organization is concerned. Whether it is the allocation of workload to the faculty or drawing up contracts and budgetary forecasts, the administrative roles provide the scaffolding on which the teaching and learning activities are organized. It is common, however, in plenty of establishments $- ja, including the ESLSCA Business School Paris $- that these procedures tend to be manual and fragmentary, and also excessively reliant on personal and not systemic resources. This chapter states and outlines the actual issues of the real-world experience in which Business Process Automation (BPA) implementation took place at ESLSCA, anchors it with the organizational level and motivates the necessity of a systematic, technology-based, and Agile-based solution.

The identification of a problem is not an initial step in the project development but rather a strategic process that defines relevance, direction, and value of any further intervention. Vague problem gives rise to feeble solutions and waste of time. As such, the chapter takes a close and meticulous look at the current administration systems available at ESLSCA to identify the ineffective processes, points of user pain, and limitations to the system. There are three primary processes of the analysis centered on workload planning, contract generation, and academic budgeting. These were picked depending on frequency, complexity, and the effectiveness on the institution performance.

Excessive reliance on individual expertise and memory was one of the important features of administrative inefficiency at ESLSCA. Faculty assignment, contract creation, and semester scheduling are used to be not documented in standard formats but transferred informally between staff members through Excel files and email chain communications. This implied that in case of inability to work, assumption of other roles, or even severing the institution, crucial experience was lost or needed to be re-learned once again, thus causing hindrances to the flow of work and more chances of making mistakes. This kind of dependence on tacit knowledge is not unique in educational organizations, particularly where there is rapid development and expansion and expansion has not been accompanied by simultaneous investment in administrative infrastructure. This difference in the complexity of the operations and the maturity of processes provided a healthy environment to investigate Business Process Automation.

Besides, manually-intensive processes in ESLSCA were not only operationally inefficient but a strategic threat as well. At the end of each academic semester or financial quarter when faculty contracts or budget projections needed to be processed, the delay in accomplishing the task caused downstream consequences of inability to pay employees on time, loopholes in covering teaching sections, and losing credibility with internal and external audiences. These were not candid occurrences but themes that kept reoccurring and took an abnormal amount of time and attention to dismiss. Having a responsive and scalable system was thus necessary and not a compromise. As far as the problem framing is concerned, it was necessary to move beyond the symptoms (delays, errors, redundancies) to address its very cause: the lack of the automated, integrated, and adaptive processes.

At the beginning of the internship, to make the automation attempts focused and fruitful, a needs analysis was carried out. The three high-impact areas were identified through interviews, process walkthroughs, and document

reviews and these are; workload planning, contract generation, and budget forecasting. These processes had some common characteristics that allowed them to be excellent processes to put into the BPA: they were high volume, high frequency processes that relied on a series of steps performed by people and with multiple stakeholders involved, and lacked centralized tracking mechanisms. Notably, they also influenced the institution compliance, financial planning and academic deliverance, which are the main pillars of any higher learning Institution. By isolating these as areas of concern, the research was able to discuss interventions that could build value as opposed to shallow solutions.

In that regard, the implementation of BPA through the Agile Project Management was not merely a technical reaction but a strategic change within the organization. It enabled ESLSCA to implement tools that fit into its current ecosystem besides introducing the basis of sustainable change through digitalisation. All of the solutions were supposed to alleviate bottlenecks, consolidate unnecessary processes, and enhance the level of transparency, which would account for the personnel to concentrate on the top-level tasks like quality assurance, policy framework, and student interaction. This problem framing went further than technical efficiency and included concepts of organizational agility and staff empowerment which are consistent with the overall mission of the school excellence in business education.

4.2 Organizational Description: ESLSCA Business School Paris

Established in 1949, ESLSCA Business School Paris is an excellent educational institution in a higher educational establishment offering undergraduate, postgraduate, and executive education in the areas of business, finance, management, and other related areas. The institution works in multicultural and multilingual conditions and with an increasing number of international students and a broad range of programs, such as

Bachelor, MBA, MSc, and DBA tracks. Variations in programs and faculty present challenges in administration that are not easily dealt with using conventional means.

The Academic Department provides the teaching load management, the assignment of the professor to the courses, the production of the employment contracts, and the academic calendar. The jobs are greatly interdependent and need coordination among various offices (e.g. Human Resources, Finance, and Programs). Nevertheless, the department is mainly based on standalone Excel sheets, manually completed Word-based reports, and email communication. Not only are these systems inefficient, but also they are susceptible to human failure, control problems with versions, and data processing delays.

In addition to that, the department is currently not using a centralized Enterprise Resource Planning (ERP) system to control these workflows. Rather, the bulk of work is done on the Microsoft Office, with Excel and Word. The use of simple tools is both an obstacle and an opportunity because the existing systems are not integrated yet, at the same time, it is known to staff and is a cheap automation possibility using scripting languages such as VBA (Visual Basic for Applications).

The organizational climate at ESLSCA is crucial to comprehend the issues, as well as, the viability of applying BPA. Although the institution has a solid reputation and variety of academic packages, its operational backbone is modest when it comes to the sophistication of system. Each administrative process of the school is on a departmental silo with separate Microsoft Excel workbook as well as manually revised Word documents due to the non-existence of a unified ERP system. This would have been adequate in previous years but the sheer size and complexity of operations have now rendered this method unsustainable.

For instance, the academic program managers have individual excel sheets of every degree pathway include the Bachelors, MBA, MSc, and DBA degree. Such files contain the details of course names, teacher names, teaching hours, and semester assignments. But there is no common schema, or even multiple adhered formatting standard of these files. This means that it is difficult and prone to error to compile this data to produce school wide teaching loads or budget estimates. In the same way, creating a contract consists of manually copying information about instructors into Word templates filled with data based on Excel files, which creates opportunities of inconsistencies, omissions, and lack of correlation to real workload information. This is compounded by multilingual programs and faculty, particularly when where courses are common across two or more programs; this is termed mutualization.

With these inefficiencies, ESLSCA staff have been taught excel and word and have created workarounds throughout their time. This is an unprecedented occasion: instead of complete replacement of the existing systems, automation scripts may be overlaid on top of the familiar tools, therefore reducing the complexity of adoption (Shadi, S. (2022). This is one of the main lessons that influenced the automation strategy. Instead of suggesting an expensive, top-down ERP fix, the BPA initiative attempted to improve existing systems through low-code automation through VBA. Not only was it more economical than the previous approach (could be prototyped quickly, iterative feedback, custom functionality), it also fit the constraints of the academic environment perfectly.

Organizational culture of a school is another significant context. Being a private school with a small administrative staff, ESLSCA prefers to use flexibility and adaptability to bureaucracy. Employees play various roles and their job descriptions are usually cross-functional. Although this enhances responsiveness, it also results in unofficial procedures and weak

documentation control. Entering automation into this scenario, the project needed to find a compromise between standardization and the freedom of the users. Agile, and its focus on small iterations and stakeholder feedback was especially suited to dealing with this complexity.

Overall, the organizational setting of ESLSCA with system fragmentation, manual dependence, and the culture of flexibility in operating the system shaped the rationale as well as the limitations of the deployment of BPA. It was imperative that, the solutions proposed were technically sound, but also viable organizationally and strategically, this necessitated that these dynamics were understood. The next sections address how each of the selected problem areas was resolved with the help of specifically planned and situationally informed automation interventions.

Table 1. Summary of Identified Administrative Challenges

Process	Current Practice	Challenges Identified	Impact
Workload Planning	Manual Excel files managed per program	Data redundancy, inconsistent formats, calculation errors	Delays, misallocated faculty hours, poor semester coordination
Contract Generation	Manual Word templates populated from spreadsheets	High error rate, repetitive work, version control problems	Legal risk, faculty dissatisfaction, rework burden

Budget Forecasting	Manual aggregation of data from individual program files	No real-time updates, copy-paste errors, lack of categorization (e.g., mutualization)	Inaccurate projections, poor financial planning
Data Integration	No central system; files shared via email or local folders	Fragmented systems, duplication of effort, lack of visibility across departments	Inefficient communication, reduced agility
Stakeholder Collaboration	Informal meetings and back-and-forth emails	Lack of structured feedback cycles, resistance to change	Slower adaptation, misalignment between academic and admin teams

4.3 Problem area 1: Manual Planning of Workload of Faculty

Faculty workload planning is one of the most resources-demanding activities of the academic department. Administrators are placed with the challenge of allocating dozens of instructors to classes in various programs, forms (online and on-situ), and semesters each academic term. Such teaching appointments should not violate the terms of the contract and other program requirements and the availability of the instructor. The current procedure includes: gathering data in different Excel sheets, counting the teaching hours manually, and the workloads assigned should not surpass the given contractual restrictions.

Various problems are created by this method. To begin with, there is a big issue of data redundancy. This is because the same information is pasted on different files raising the likelihood of being inconsistent and having version

conflicts. Second, the computational miscalculations usually happen because of misalignment of the formulas, improper references, or typing errors. These mistakes result in arguments on carrying loads and, in other cases, the violation of labor legislation. Third, real-time information is lacking thus program managers tend to work on old data, which necessitates a last-minute overhaul thus killing the plan.

Such issues are further compounded by lack of central database or automation. One mistake in one of the spreadsheets can spread to all other files and contracts, plans in budget and the teaching calendar. The inefficient workload planning not only puts more pressure on the administrative personnel, but also decreases the capability of this personnel to tend to the tasks of the value-addition such as the curriculum development and academic innovation.

4.4 Problem Area 2: Generation of contracts manually

The second issue highlighted includes the manual preparation of faculty contracts. Every instructor should be prepared a contract dealing with the issue of number of teaching hours, hourly rates, program information, semester dates, and specific course assignments. Such contracts are made in Microsoft Word with common templates. Nonetheless, data has to be entered into a single contract manually based on various excel sheets and this clerical process would consume several man hours besides taking time.

It is a manual process that is time consuming and error prone. There are cases when contracts are dispatched in error names or hours of teaching or even inaccurate compensation amounts. Often requested changes by faculty are also marked throughout the email which is rather cumbersome to manage version control. Also, because of the amount of contracts that are processed per term, the Academic Department can be under deadlines thus chances of missing out are high.

This poses serious risks as a compliance matter. Contracts are legal and any error in them may result in labor conflicts, failure to meet regulatory standards and diminished institutional image. Besides, the effort used in contract preparation is taken away at the expense of more strategic activities of the HR, like faculty integration and faculty performance.

Having an automated system, with data being extracted centrally and inserted into dynamic Word templates, might be time-saving and more error-free and neither will it affect compliance nor be less efficient. These pain points are exactly the main problem that the VBA-based solution suggested and developed in this thesis seeks to resolve, with the introduction of a form-based approach to automatic contract generation, which minimizes the manual entry.

4.5 Problem Area 3: Budget Forecasting and Academic Scheduling

The third area of concern comes in the form of budget forecasting which deals with the cost of academics being delivered in various programs. This consists of combining information about total of teaching hours, components of soft skills, mutualized courses as well as program-specific needs. Financial planning, resource allocation and the institution reporting are important with regard to budget forecasting. In ESLSCA, however, this task is also carried out manually relying on Excel files that were created by various sources.

The most significant weakness of the existing strategy is that there is no direct connection in real-time with the workload planning spreadsheets and the budget files. This means that whatever the change in teaching duties or structure in the program, there is a manual need to update it in various documents which would apply a high risk of inconsistency. Also, there are no validation rules or formulas to mark any anomalous values or confirm that the budgetary limits are observed.

It is also impossible to perform scenario modeling and what-if analysis in the current process, which are crucial in the post-pandemic world because the enrollment of students and the availability of faculty members can change quickly. The finance team and academic leadership will be bound to making decisions based on some frozen shots since it is in absence of a dynamic tool of forecasting that strives to make decisions based upon responsive and data-driven insights.

The internship project resolved this by developing a budget template generator, which accumulates the workload information and indicates costs per program, including such features as the soft skills credit tracking, mutualization tagging, and permanent staff classification. This instrument is the third pillar of the suggested BPA solution.

4.6 Overview of the Problems Identified

The issues mentioned in this chapter, Load planning of work manually, Contract generation done manually, Budget forecasting being done manually are not issues in a vacuum but symptoms of a larger inefficiency in administrative process design. They are caused by three basic reasons:

1. Dependence on manual numeracy: Manual dependence on Excel and Word overdependence in manual numeracy is the major problem of redundant work and error-proneness.

2. Absence of integration: The various administrative functions exist in distinct silos and it is cumbersome to create consistency of data or to ensure communication.

3. Poor ability to perform strategic functions: Manual work requires too much time that cannot be used to innovate, to perform quality assurance checks, or engage in long-term planning.

All these problems harm the capacity of the institution to grow, evolve, and assume a competitive position in a gradually digitalized education environment. Structured and incremental automation to remedy them is not simply a convenience issue: it is about strategy.

4.7 Justification and Definition of Project

Work performed as the internship project by the writer, and in the foundation of this thesis, was devoted to addressing all these challenges, directly, by creating and deploying three automation tools through use of the VBA in automation projects, via Agile project management strategy. The reason towards the selected VBA is because it is affordable and flexible besides being accessible. VBA may be applied with the help of the available resources and excluding external providers in contrast to proprietary software or ERP systems.

Using the Agile Scrum methodology, the project could be iterative and its stakeholders received feedback after each iteration and could improve continuously. Tasks were clarified as an item in the backlog, organized in sprints and tested with the end users through practical tests. The areas covered were specifically restricted to items with a high impact which automation would provide a quantifiable benefit before the end of the internship period.

The objectives of the project developed at the beginning of the thesis formulated the reduction of the processing time by at least 50 percent, the removal of calculation and data entering mistakes, better visibility between the departments and enhanced personnel satisfaction. These goals were both technical and strategic as they had an interest in transforming the culture of the Academic Department which was too much focused on reactive problem-solving to be proactive process design.

4.8 Formulation of research questions and subject formulation

According to the above-mentioned problems, the given research will be structured as follows a central research question:

What is the role of Agile Project Management with the help of which Business Process Automation can be used to enhance workload planning, the process of generating contracts, and budgeting in academic institutions?

The supporting sub-questions will be:

What are the existing principal inefficiencies within the existing academic administrative practice in ESLSCA?

- How do VBA based automation tools enhance accuracy, efficiency and transparency?

- How to communicate Agile methodology as an adoption driver and user engagement?

- Are the tools that scale up to other departments or institutions?

It is possible thus to formulate the scope of the present research as:

Business Process Automation Using Agile Project management A case study of workload, contracts and scheduling systems of ESLSCA Business School Paris.

By further analyzing the administrative system at ESLSCA Business School Paris, one will find out that the problem of the processes fragmentation was not only caused by old technologies but organizational silos as well. All programs (Bachelor, MBA, and MSc ones) were run semi-autonomously with each coordinator having his/her templates, processes, and records. The

relative autonomy permitted local adaptability, but involved a high degree of duplication of effort, and hampered the establishment of a unified sense of the faculty work, pay rates, or teaching loads. Therefore, technological fragmentation was not the only problem but the fact that standardization did not exist across departments in terms of their processes.

At the sphere of work load planning academic managers frequently were to meet the opposite extremes of spread-sheets that the course hours were not associated with the faculty availability or contracts. The case in point would be that you can have an instructor who appears to be under-loaded in one program but what he or she was teaching may already be a full load spread across various programs and the information may not have been easily seen without manual checks. This time-lapse visibility was one of the most important impediments particularly at peak planning time and tended to end up misusing faculty resources and causing schedule conflicts at the last minute.

Although the process of contract generation was procedurally uncomplicated, it was characterized by ineffective integration with the upstream planning. Planning sheets had to be manually copied onto a word template, and there was no way to validate what was on the planning sheets and the Word template. Mistakes in the name of the course, hours or even the instructor could be very common. These things slowed down the signing of the contracts, affected HR processing and reduced the professional image of the institution. Error of pay ranges could trigger a problem between payments and more commissions in other reported cases and more demands on HR departments to make adjustments. This has brought to light a deal-breaking operation gap: the lack of traceable and reliable contract data pipelines between planning and document output.

Budget forecasting process brought another dimension. To some extent, forecasting errors were common because the teaching hours and pay rates

were handled manually. There was also a discrepancy in the estimated teaching costs of programs by being over estimated or under estimated the actual cost compared to the planned cost. In addition, mutualized courses that are jointly used between a number of programs were frequently budgeted many times with the end result of making a misrepresentation in the total numbers. The finance teams did not have many instruments of checking those estimates without backtracking a lot. Such plethoras complicated the possibility of justifying budgets in case of an audit or dispersing resources fairly between programs.

The common denominator of all three domains of the problems of workload, contracts, and budget was absent automated and centralized control of the data. Although each of the tasks was carried out efficiently by the skilled personnel, the manual character of the business processes unnecessarily exposed the operations to risks, and compromised institutional speediness. Notably, all these problems were not related to the lack of struggle and skill. Instead of this they were symptomatic of systems which had not matured in the face of advances in organizational size and complexity.

When diagnosing these issues, the project team also found that it would not be sufficient to apply technological intervention. It also demanded a certain methodological change, that would adopt the principles of the iterative development, user feedback, or the alignment of the processes. It was this realization that influenced the introduction of Agile practices and the formulation of the BPA tools that ensued.

Chapter 5: Methodology of Research

5.1 Design Logic and Inquiry Approach

The chapter on the research methodology represents the step-by-step process followed in the exploration of the issues and the aim identified

earlier in this thesis. Description of tools and techniques are not the only aspects of methodology- it is the demonstration of logic, philosophy and direction of the individual research on designing a study that is scientifically valid and relevant to the managerial field. Following the applied research orientation of ESLSCA, this thesis has taken a mixed-methods approach, the combination of the qualitative and the quantitative method. It is aimed to provide the knowledge of not merely the technical realization of Business Process Automation (BPA) tools, but also organizational, human, and managerial aspects this change influences and is influenced by.

The study is presented as a case study of the ESLSCA Business School Paris based upon a real internship project. The popular receipt of case studies in management research has been their ability to study phenomena that are complex and dependent on the surroundings. In this way, the application of Agile Project Management (Agile PM) principles can be analyzed thoroughly in terms of the use of BPA tools in three administrative areas: workload planning, contract generation, and budget forecasting. The chapter goes ahead to address the research design, the methods of data collection, instruments to be employed, the sampling plan, the ethical issues and limits.

5.2 Design of the Research

The exploratory, descriptive and evaluative research design is used. Exploratory in the sense that it expects to investigate relatively under-represented territories in academic administration in the case of low-code BPA, that is, low-code BPA via Agile PM. Descriptive since it describes the development and application of automation tools within an actual institutional set up. And evaluative due to the intention to measure the results and effects of such tools on the administrative performance.

The approach (mixed-methods) was selected with the aim of having a comprehensive picture. Data was collected on the qualitative side via semi-

structured interviews, direct observations, Agile sprint reviews and casual staff analysis. This enabled a researcher to gain perceptions, motivations and user experiences. On a quantitative level, types of operational data including processing times, error rates, and version control logs have been reviewed pre and post automation to assess quantitative gains.

Such triangulation of methods offers both depth and breadth, through which the study is in a position to answer quantities and how and why questions alongside what and to what degree. The incorporating of the project logs and the development phases of the VBA also are profitable to the practical transparency of the study. Besides the use of qualitative and quantitative methods, embedded case study design has been encompassed in the research, addressing ESLSCA Business School Paris as a bounded system in which the intervention was conducted. The embedded study also enabled the researcher to take a proactive role not only in observing but becoming a participant-developer in the conceptions, development and the iterative improvement of the automation tools creating a closer relationship to the development of the automation tools. Such a location permitted the appropriate capture of nuanced reality of operations and made co-creation of answers with the stakeholders possible; a characteristic that is especially aligned with action research in education.

Moreover, the development of the research design acknowledges the contextual sensitivity of process innovation within the higher education. These institutions typically have a great degree of institutional inertia, which implies that even small changes in administrative practices may trigger disproportionally summed-up responses to a given institutional change. Organizational culture and digital literacy were hence considered as the influencing variables by the design with user readiness as well. These were measured informally by evaluating them early on using observations, and triangulated with post-implementation responses. The design involved also

the presence of iteration check points after every Agile sprint, not only as an evaluation point but also as a reflexion point on where to adjust development goals in consideration of stakeholder feedbacks.

The second particularity of the research design consisted in its longitudinality. The study was bounded to the internship schedule but the design was such that it covered the entire life cycle along three BPA interventions, that is, problem scoping and creation of a backlog, development of tools during sprints, and evaluation after their deployment. This gave the option of monitoring differences since the outcome levels could not be independently measured but showed the change over time, increasing the internal validity of outcome data.

Finally, the consideration of ethics was incorporated into the design. All the staff participated in the interviews or were reviewing the process under an informed verbal consent. Where possible, the data was kept anonymously and the feedback was collected in a non-judgemental, collegiate style. Such an ethical stance enhanced openness and natural authenticity in user interaction and thus enhancing the quality of qualitative results. Overall, the research design represented not just a blend of methodological excellence and immersion in the realities of the writer life it aimed to enhance but was also very flexible to the pressures of the academic sphere in which it was created.

5.3 Methods of Collecting the Data

The data was collected using three major methods: the analysis of documents, interviews, and tracking of the system performance.

1. Document Analysis: The researcher used data analysis of documents such as program planning papers, contacts templates, the e-mail records, and budget sheets. Such records proved to be essential in deriving the exact

situation of how things are being done in the administration and establishing the duplication and incompetencies, as well as usual goofs. Agile sprint records and VBA code scripts were also considered as research artifacts and allowed to map the processes and analyze their complexity.

2. Interviews: Semi structured interviews were carried out among the stakeholders:

Academic Coordinators (n=2)

- Managers of Programs (n=2)

Faculty Members (n = 2)

Human Resources Representative (n=1)

All the interviews took 30-45 minutes and used an open-ended guide to cover how they see administrative burdens, how they use the available tools, their attitude to automation, and their reaction to prototype versions. Transcription and theme coded interviews in Excel were used.

3. System Performance Tracking: Performance figures were recorded on excel and word usage reports, interest has been taken on number of hours exercised on manual process pre and post implementation of BPA tools. Also, the rates of the incorrectness in contracts and workload assignments were monitored according to the discrepancies identified at the validation stage.

This combination of techniques also guarantees that final results are both based on real users experience and are objectively backed by efficiency criteria. Besides the three major methods, observational data was used as a supplementary method to define the research findings. Although the embedded position of the researcher in the Academic Department would not be coded as a standalone method, the informal observations carried out

during staff meetings, tool walkthroughs, and informal feedback sessions could be collected on the go. These almost acted as the contexts giving color to the formal data to bring out tacit behaviors, unarticulated assumptions, and contemporaneous user reactions that would not have been visible during structured interviews. As an example, emotional reactions of staff, responding to automated related tasks, were frequently given voice, that served to complement the more toned down interviews transcripts.

In the analysis of documents, particular regard was paid to version histories and naming conventions on Excel and word files. These artifacts were not the only source of administrative data but flags of process discipline and information management behavior. The process of rooting out out-of-sych file directories and inadequate document control processes was a useful starting point into the nature of inefficiencies at the base of document governance, which fed directly into the automation logic required (e.g., the need to enforce naming conventions, minimize duplicates).

Triangulation in the interview process was also achieved by use of diversity in roles. Through involvement of the stakeholders in the research in all the academic, administrative and the HR functions, the researcher managed to triangulate on viewpoints on the pain point in the process. As an illustration, what program managers referred to as time- absorbent reconciliation, faculty used to refer to as delayed or not well comprehended contracts. Such superposition of views contributed to the more comprehensive picture of understanding the institutional problem space and intended to enhance the plausibility of thematic results.

The tracking of the system performance was not reduced to the time savings but also to the measure of the task reliability. This included examination of the type of errors (e.g. data entry, missing fields, version mismatch) and categorizing according to their effect and its frequency. This allowed creating a pre/post automation comparison matrix, where a given BPA tool is

associated with a measurable area of impact. Screenshots of VBA logs and outputs were saved where possible to assist in transparency and reproducibility. In addition to these improvements in data collection, they altogether provided the research findings that were empirically based and contextually detailed.

Table 2. Functional Requirements of BPA Tools

Functionality Area	Workload Planning Tool	Contract Generator	Budget Forecast Tool
User Interface	Dropdown selection for professors	Dropdown to select professor	Auto-generated worksheet, color-coded rows
Data Input Source	Excel sheet with teaching assignments	Excel sheet with name, course, hours	Planning export file containing all teaching data
Automation Logic	Auto-calculate VH (volume horaire), S1/S2 hours	Auto-fill Word template with professor data	Aggregate hours and costs by program and course type
Error Checking	Prevents double entries and inconsistent values	Checks for missing teaching data or mismatches	Validates budget totals, flags mutualization errors
Outputs Generated	Summary of faculty hours per semester	Signed-ready employment contracts	Forecast report with categorized teaching costs
User Skill Requirement	Basic Excel familiarity	Basic Word familiarity	Intermediate Excel use (navigation and validation)
Performanc	Reduce planning	Cut contract prep	Eliminate

Functionality Area	Workload Planning Tool	Contract Generator	Budget Forecast Tool
Core Goal	time by 70%	time by 85%	aggregation errors, support scenario testing

5.4 Automation using VBA as a Research Tool

The automation tools used are the interventions as well as the instruments in this study. Three systems which are custom-made were created with the use of Microsoft Office VBA:

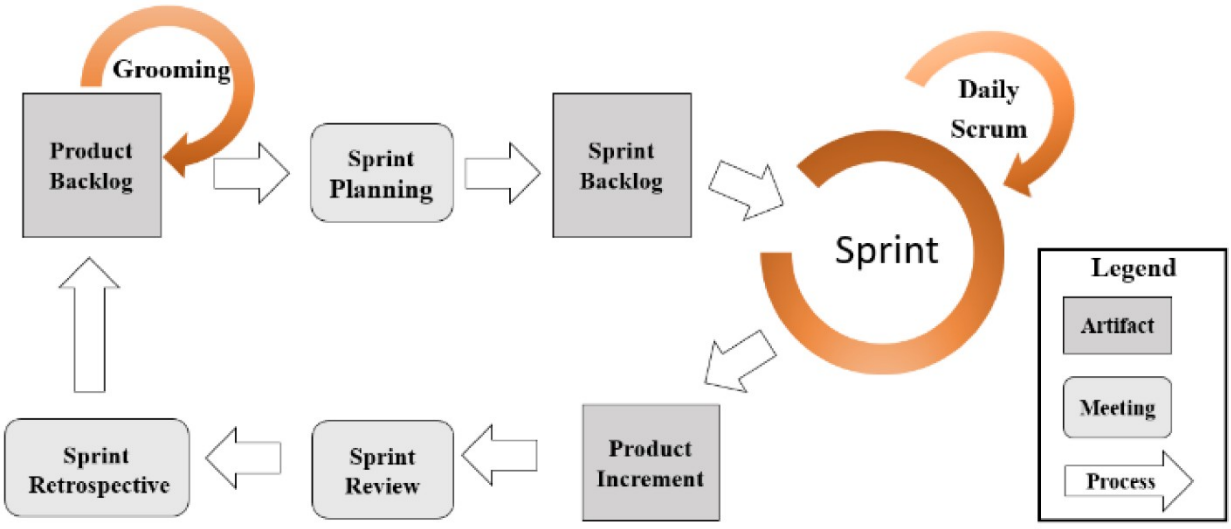
- A Workload Planning Template Generator which adds total hours per instructor and per program based on drop downs and structured data validation.

A Contract Generator, which automates the creation of employment contracts depending on teaching assignments with the help of a dynamic Word document, associated with the data in Excel.

- A Budget Forecast Tool that sums up the hours, ECTS, soft skills and

mutualization flags to project the expenditures of the teaching.

Figure 1: Agile Sprint Framework Used in BPA Implementation



This was done in a progressive iteration of sprints and tailor the tools to the feedback provided by users. Log functions, timestamp generators and input validation checks were given in each of the scripts as well as used to collect performance and usability data. Screen captures, code extracts and user manuals were all kept in a shared folder with the academic team. These materials started serving as valuable sources of qualitative and quantitative data in the study. Viewing the VBA tools as interventions and as a tool of analysis made it possible to combine the interventions and behavioral knowledge contained in the research. The two-dimensionality of the tools allowed the researcher to gather live consumption data, monitor modalities of adaptation, and evaluate to what extent the needs of users were satisfied in practice. An example is that timestamp facilities provided in the scripts recorded the actual time delay of a time between data insertion and the ultimate output production into a measurable factor of efficiency. These logs provided contemporaneous measures of data complementing self-reported

measures of confidence in time savings included in interviews and questionnaires.

In addition to the tracking of the use, the VBA toolpack had error handling routines that gave an understanding of the user feedback in the system. As a case in point, in case an instructional teaching load was not chosen out of a drop down list or a teaching teacher name was not entered, the script would display a warning message and come to a stop. Types and the frequency of them became the diagnostic layer of the usability with recording these interruptions. Through an analysis of which validation rules were performed most often, the researcher was then able to better optimise input forms, maximise design-readability and enable an even more intuitive interface, similar to how the iterative tools can be improved through empirical testing.

It was also the development process by itself that acted as such a reflection of Agile implementation fidelity. All sprints were culminated by internal reviews, during which employees communicated with prototypes and offered them with organized feedback. These meetings were recorded as meeting notes, backlog updates and code updates. By making each iteration an archivable record, the project left a rich chronological record of the project, not just the results of what was built, but how stakeholder needs changes throughout the project lifetime. These documents supported the research in its transparency and demonstrated how the ideas of Agile, responsiveness to change and continuous delivery were implemented in a higher education context.

Lastly, the fact that artifacts, including annotated screenshots, user manuals, changelogs, and code snippets were stored in a common institutional folder helped to bring about the aspect of organizational learning in the research. These materials were used both as instructional tools and research deliverables so the staff members could reuse or

augment tools after the project. In this sense, therefore, the VBA systems became the living part of documentation of process improvement and user-centered design in the realm of academic.

5.5 Sampling strategy

The purposive sampling strategy was used because of the scope and settings of the project. Data sources and participant selection were criterion-based on relevance of the three core processes under investigations. Take an example of people chosen as academic coordinators because of their roles in the distribution of work, and HR staff was brought on board because of their roles in checking contracts and issuing them. Despite the small sample size as limited by the organizational nature of the institution in terms of its size as well as scope of the internship, sufficient sample size was achieved in order to reach saturation in concepts pertaining to utility, workload, and bureaucracy. An important strength of the purposeful sampling in a case study is the capability to obtain knowledge with the help of people who are the most affected by the phenomenon under analysis.

The research objective, which was to refer to the experiential depth instead of statistical generalizability, informed the purposive sample strategy. This was aimed at linking to stakeholders who had first-hand involvement of the running of the administration processes that were being automated. This involved representatives of several levels and functions of the departmental structure and guaranteed a cross-functional interpretation of the pre-automation pain points and the post-implementation results. As an example, the program managers were chosen as much because of their administrative activities as because they were go-betweens between the academic personnel and institutional administration, solving on a regular basis problems involving teaching loads disproportions or budgetary differences.

Also, purposive method was exercised with the implicit inclusions of a maximum variation sampling in order to increase the bounds of representativeness inside the bounded case. This implied that the choice of participants had a variety in the types of role, years of experience, and program affiliations (e.g., undergraduate and postgraduate programs). The inclusion of this variation allowed the study to identify general patterns that could be observed related to the context of the different users whereas it also elicited distinct concerns that could interfere with tool scalability or adoption.

Although the numerical sample size was limited (n = 7 interviews), thematic saturation occurred rather early, as the expertise was concentrated in the sample (belonging to the same professional family). The answers started gravitating towards similar areas of pain- such as version control problems, manual updates being time-consuming, and that there is no shared visibility of the academic information. This further corroborated the findings. Further, since some of the participants dealt with more than one of the three processes (i.e., there were those who were both involved in contract issuance and budgeting), their reflections served multi-process considerations, which stimulated the analysis.

The researcher was also reflective in the sampling and interaction. The methodologies of the study were conducted on operational environment; therefore, in selecting the participants, it was sought to eliminate the bias in the sampling process by speaking to the department heads to help them in being part of the study; also in representation, various voices of the various entities were equally echoed. This method of sampling, considering contexts and differentiated-selecting significance, secured relevancy and depth of the data gathered, as it would not be adequate to limit ourselves to the answers of the breadth or statistical significance, as they are commonly valued in case study methodology.

Table 3. Sprint Objectives and Outcomes

Sprint	Duration	Main Objectives	Key Features Delivered	Stakeholder Feedback
Sprint 1	Week 1	Design MVP version for each tool; establish data connections	Professor dropdown in workload tool; name auto-fill in contract generator	"Very promising start, needs more validation on outputs" – Program Manager
Sprint 2	Week 2	Add error handling and automated calculations; expand to all programs	Soft skills flag in budget tool; semester-wise aggregation in workload planner	"Makes our life much easier" – Academic Coordinator
Sprint 3	Week 3	Improve formatting and reports; finalize export functions; deliver training materials	Summary tables, auto-save contracts, color-coded budget sheets	"Feels professional and ready to use" – HR Administrator

5.6 Meta Data Agile Sprint Logs

A significant fact about the present study is the utilization of Agile sprint logs as data source. The sprint board (which was updated with the help of Trello) had items related to user stories, list of tasks, bugs, requests of enhancing, and status updates. Both a Sprint Review and Sprint Retrospective came after each sprint and feedback was gathered to be included in the subsequent cycle.

These logs offered an insight on:

- The changing insight into the requirements of the users

- Decision of task prioritization
- Velocity and productivity of development

The sources of resistance and friction

Considering these Agile artifacts as meta-data allowed the researcher to figure out not only what was automated, but also how this process of automation occurred in the course of time. This included an element of time into the otherwise flat case study design. The choice to treat Agile sprint logs as meta-data is methodological innovation that occupies the zone between conventional case study research and the concepts of design-based inquiry. In contrast to other types of datasets that are undeniably static and give one a sense of what is going on in a process at very specific moments, sprint logs gave a readable account of what was happening with a project over a period of time. That was not only what the work was done, but also the reasoning of how the order in the tasks was made, whether I had to adjust the assumptions I started by, and whether priorities needed to be changed in accordance with the information provided by the stakeholders. These logs therefore proved indispensable in carrying out a process-tracing analysis which allowed the researcher to plot the introduction, testing and evolution of a particular feature in the tool e.g. dropdown filters, auto-validation prompts and error messages.

All the user stories documented on Trello had a common format (e.g., “As a program manager, I want X in order to Y), which made the roles and expectations of stakeholders clear. In three sprints, a total of over 40 user stories were created and annotated with status of the task (e.g., to-do, in-progress, done), effort used to estimate, and the time spent to complete each task. These data points were then studied to determine the speed of development, areas of bottlenecks and the frequency of change requests. Remarkably, the majority of the changes happened not due to technical

issues but on the basis of usability feedback thus indicating the human-centered character of the BPA intervention.

We also took retrospective notes, which were usually recorded as bullet points at the end of every sprint and they presented emergent themes on tool fatigue, user sentiment, excitement or friction. In a number of occasions, team members indicated their initial opposition to automation capabilities now adopted, such as locked text boxes or self-sorting tables. This change was recorded in the notes themselves, providing a time chart of the attitude change. Such observations were useful in helping to form context on the basis of the interview results and giving a deeper insight into the change and innovation oriented culture of the institution.

The introduction of Agile artifacts into the research architecture shifted the project into the nontraditional form of linear analysis and allowed using a living, adaptive model of not only inquiry but also action. The sprint logs were not merely accounts of what took place, they indicated why presentations were made, how learning took place and what the tensions were that surfaced during implementation. This moving quotient of information really boosted the exegesis power of the case study and demonstrated the usefulness of Agile not merely as a methodology of development, but reasons to think of it as a tool of research.

5.7 Ethics

The study was carried out according to the ethics that the ESLSCA Business School Paris ought to meet. All the interview participants gave their informed consent. There were no individual data that was retained more than anonymized thematic codes. The interviewees were told that they can withdraw at any point and that no professional status would change (because of the participation). Besides, any automation tool that was created as a part of this project became transparent and shared with the

institution. They were developed in line with principles of GDPR, especially they limit the exposure of the information and, above, useless increased copies of data. Documents and scripts were preserved only on internal and secure drives (Chukwunweike & Aro, 2024).

Lastly, the scripts within the VBA were developed with the read-only and review functionalities, which enable a user to view produced outputs prior to finalizing them. This does not only make them more trusting, but it also provides a degree of moral responsibility to the automation itself. The study was concerned with situational and relational ethics besides procedural ethics since data privacy is not always the only implication that the act of automating administrative processes might cause. As an example, initially, some of the staff was sceptical about the possibility of automation making their jobs irrelevant or diminishing their impact on the decision-making process. These fears were managed in a sensitive way by continued conversations, frank communication on the goal and boundaries of automation, and the graduation of sprint review where employees are included in the sprint review process. Including staff in coming up with solutions and making suggestions in retrospectives created an atmosphere instead of conquering them with a top-down change. Such style of participations is in line with modern ethics models whereby respect, autonomy and collaboration are pertinent factors, particularly in research in organizations.

The other ethical aspect was the possibility of the algorithmic bias or over-automation. When constructing tools that manipulated and computed institutional data it was very important to make sure that the logic that was being programmed could be audited when changed. This is why the VBA code scripts were well commented in line and distributed in editable forms. The users were not only trained on how to use the tools but also how to check up the calculations or make adjustments to them where necessary.

That design decision supported the moral sense of empowering the user and avoided developing a system that would resemble a black box, as it would hide the guarantee of the way decisions are arrived at.

Moreover, the study had taken cognizance of ethical dangers associated with institutional politics. Since automation has a tendency to change the process of work and the roles people have to play, there exists the potential of negative consequences that may involve the displacement of jobs, changes in prestige or interdepartmental friction. In order to balance this out, the suggestion of automating the systems was always presented as something that will not be replacing the human element, but will only be serving to facilitate the automation of routine-based but error-prone processes, with no intention of taking away the human judgment or sideline the coordination efforts between people. The wording of interview scripts and workshop materials has been carefully formulated in a way that does not pitch the tools as negative in the sense of being performance monitors, compliance enforcers.

Lastly, the security of the data was maintained by strict security over access to files, versioning, and backup. Any external cloud systems were not employed, and all the data trades were performed within the institutional internet. The logic involved in automation scripts was non-destructive which implies that any automation script never removed original files or overwrote user inputs without issuing confirmation prompts. In places where reports or contracts were created the tools supported such abilities as preview and that way the users were able to check things before finalizing on a view. This aspect did not only boost the level of trust but also invoked the principle of ethical automation that emphasized the fact that the human user still had the control over the end results. The ethical considerations collectively, which all these are concerned with, including consent, transparency, participation, empowerment and data protection imply the

height of a responsible research. They made sure that the BPA initiative developed the quality of administration without undermining the dignity of an individual, institutional trust, and academic integrity.

5.8 L & d of the Methodology

In as much as the research design was suitable in the case that was being dealt with, it is also of importance to note that it had its shortcomings:

- Generalizability: Since it is a single case study only, findings cannot be applied to every academic setting. Yet, the challenges and patterns of the processes are massive in a lot of learning institutions that do not have integrated ERP systems.

- Sample Size: The relatively small figure of interview respondents restricts the width of perspective of the stakeholders in spite of the fact that saturation of the nodes was reached on main themes.

- Technical Limitations: Flexible as it is VBA is limited in reason of scalability and cross platform compatibility. It can be used in the development of prototypes but might require an upgrade in the long term implementation.

- Time frame: The fixed time of the internship allowed doing limited sprints, which may have limited the improvement of some of the features.

Nevertheless, although the methodology has such limitations, it still forms a solid background of learning effectiveness of BPA realized through Agile project management in a higher education setting. In order to be methodologically rigorous the research design included the principles of design science research (DSR) and Agile project management. DSR research is a well-established paradigm in information systems research that attains focus on creation and assessment of artifacts e.g. tools, models,

or systems, which address a specified organizational issue. In our case, the workload, contracts, and budget automation tools are all based on VBA; hence each tool is termed as an artifact to fulfill certain specified functional needs that were observed in the field. The study also adds action-relevant contributions to practice through Organisational practice by basing the research in DSR.

The study used convergent mixed-methods research design, wherein qualitative and quantitative data were gathered simultaneously, and then were combined in the course of analysis. Some of the quantitative measures involved time consumption on processes prior and subsequent automation, the errors that were detected, as well as the frequency of use. They were collected by time logs, error reports and document version histories. Semi-structured interviews, sprint retrospectives, and observational journals kept during the course of internship are sources of qualitative information. This two-pronged option made it possible to attain quantifiable verification as well as meaningful interpretation of tool performance and the user experience.

One of the methodological contributions of this paper was the incorporation of sprints as a collection period in data. Every sprint was an isolated set of tool development and, in addition, a unit of analysis. The feedback gathered after every sprint was coded, categorized, and deployed as a theme. A good illustration of that can be seen when user requests of the dropdown validation in the workload tool was followed, analyzed and introduced in one sprint cycle, showing a short feedback loop. This sprint structure also enabled the researcher to see how the behavior, attitude, and use of the tool is changing, over time to provide a study a dynamic longitudinal aspect.

The analysis is another swimming strength of the approach because it decided to be constructed on low-code platforms that end users know how to use. The choice of using VBA in excel and word was not only motivated by

its scripting capability but also the fact that the tools were already incorporated in the day to day running of ESLSCA. This reduced the learning effect and greater user involvement within the prototyping. Compared to step-by-step enterprise systems implementations that are top-down, this bottom-up method of enterprise systems implementation allowed the employees to play a significant role in the design of solutions. By doing this the principle of Agile of working software over comprehensive documentation was represented in the research methodology, but academic rigor was not sacrificed.

The ethical issues were addressed under such aspects as informed consent and confidentiality. The purpose and scope of the study were informed to all the participants in the research mostly the administrative staff and faculty managers. No confidential personal data was retrieved, and all interviews were made anonymous. Since the tools have been created in a realistic institutional environment, attention was paid so that they did not interfere with the operation of existing workflows and that they supplement them instead.

Lastly, triangulation was used as its basis of the evaluation strategy. The staff was used to validate quantitative efficiency measures, and user interviews would be vindicated with observational notes noted during the sprints. It provided a high internal validity and it also aided in controlling researcher bias. Projecting action research concepts, Agile delivery, as well as mixed-method analysis, the methodology not only enabled the successful development of the automation tools but also produced valid insights on the institutional impact of the tools.

It is possible to highlight one of the methodological issues as associated with the low scalability of observational data. Although the embedded researcher role offered opportunities to obtain a rich, contextual data about organizational behavior, the lack of formal ethnographic procedures implied

that certain observations, particularly, informal interviews or spontaneous user response, could not be compared and generalized systematically. It is a trade between immersion and standardization that is typical of action research, especially where projects are time limited, and it points to the necessity of developing a more formalized ethnographic tracking during the later rounds of investigation.

The other limitation that stands out is related to durability and institutionalization of tools developed. The VBA scripts have been successful in the context of the study, but they leverage local storage, narrow controls on the access, and only manual updates of the reference data (e.g., academic calendars, course catalogs). This leads to a reliance on the continued diligence of the user and may lead to the accuracy of the tools becoming far less over time. In spite of the fact that some procedural guides and technical documentation were introduced and shared with the institution, the absence of some defined governance or change management protocol can be the threat to the tool lifetime. This is also a reality as to why introduction of technically sound artifacts in organizations that have no formal IT support systems is limited.

Another limitation is that the views of the stakeholders, both students and those outside the organization, have not been reflected in the data collection procedure. Though this delimitation is justifiable by the fact that the study is the subject of the internal administrative processes, future studies could be enhanced by introducing some metrics as the indicators of automation effectiveness that face students, i.e., the turnaround time of contracts registration, the notification on the schedules, or assignment to teach, etc. An addition of such end-user data may complement the multi-dimensional assessment of administrative tools by relating the backend changes to student satisfaction or the result in academics quality.

One should also take into account technological obsolescence risks of low-code solutions such as VBA. Microsoft has already started to promote the use of cloud-based sooner solutions like Power Automate and office scripts. Although the existing VBA setting is consistent with the current practice of the institution, future applications thereof is subject to decline following the adoption of the latest versions of Office (or even moving towards web-based infrastructure). Thus, VBA should be perceived as a transition period but not a solution in the long-term perspective since applying VBA is strategic in the short term. Such a limitation does not only affect the technical architecture, but also some aspects dealing with the sustainability of the organizational learning produced by this study.

Also, an inability to form a formal control group restricts a possible accuracy in identifying improvements that can be ascribed to the actions of automation alone. Even though changes in processing time and error rates were measured through measurement of pre/post comparisons, external influence of factors such as, staff familiarity, changes in workload due to seasonal variations, or concurrent changes within an organization may have contributed to those results. Future methodological rigor would benefit from inclusion of a control group or parallel manual process to use as a direct benchmarking comparison.

In addition, no formal tools of usability testing, e.g., the System Usability Scale (SUS) or heuristic analysis were used in the study. Although the qualitative methods of user feedback via sprint retrospectives and interviews were obtained, a measurable data might be obtained using a standardized tool that might give a measure of user satisfaction, learnability, and perceived efficiency. The inclusion of these tools when conducting research in the future would enhance the ability to extend those findings and apply them to other institutions and sectors.

And finally, although triangulated design increased the internal validity, the study is subjected to bound due to external validity. The obtained knowledge can be used mostly in the institutions of comparable administrative maturity, access to resources, and familiarity with digital tools. Nevertheless, methodological blueprint, which encompasses the combination of Agile and DSR and a mixed-methods design, presents something replicable, modifiable in other settings, and needs due alterations of scale, control, and differences in culture. The awareness of these failings does not diminish the contributions of the study but contributes to a realistic assessment of what it attempts to cover and thus the further research in this area and iterative enhancement in the academic process automation studies.

Chapter 6: Automation of Workload Planning

6.1 Purpose and Strategy Relevance

Planning or monitoring faculty workload is one of the most inefficient and time-consuming activities within academic administration which leads to numerous errors. This entails the process of assigning available instructors to the planned courses in a variety of programs and semesters under limits of the contract, availability restriction and institutional regulations. At ESLSCA Business School Paris this activity was historically conducted manually with disconnected excel files, thus leading to inconsistency in data, duplication of efforts, and lack of real time visibility. In this chapter, a design, development, and implementation of a Workload Planning Automation Tool in Microsoft Excel VBA programming, that was developed as the internship project, will be delivered. It describes the problems with the former manual system, how the automated was operating, the Agile development process that was applied, and the outcomes that were delivered with regard to Maiello, A. S. (2023).

This chapter is not only that of describing technical artifact, but rather of showing how automation driven by user requirements and iterational development can make the world of difference, and not in terms of efficiency alone, but also in achieving accuracy in a mission-critical academic process. The first of three elements of the core automation systems created at the internship is the workload planning tool which is a basic case of the remainder of the thesis.

6.2 Prelude to the Automation State

Before the an automation process, the workload planning under the ESLSCA was distantly organized using a set of loosely connected Excel files which had to be individually maintained by the program coordinators. Every coordinator had a file of a certain program (e.g., Bachelor, MBA, MSc) where it was indicated who will teach, on which courses, what was estimated to be taught in terms of number of hours, and what are the notes. The Academic Operations Department then combined these files into the master spreadsheet manually, which computed the total number of hours and produced summary reports.

A list of inefficiencies in this system was obvious at a glance. To begin with, there was inconsistency in data in program files. The same instructor may be written in various spellings or in various forms and therefore aggregation across programs is a challenge. Second, manual calculations tended to result in formula errors or unnoticed limitations e.g. of maximum contractual hours. Third, no automated validation of workload distribution, mutualization tags and semester alignment was provided. Finally, there was no central dashboard that would show in real-time the instructor assignments on all programs, semesters, and courses.

Due to this, the academic team even used to take weeks verifying and reconciling data, course allocations needed to be done manually and it would

take time to produce reports which were very much obsolete because they were not commissioned properly. It is somewhat evident that the process they had was not scalable, if ESLSCA will continue to diversify its programming and network of faculty. This system was at once seen to be quite inefficient in several ways.

Table 4. Workload Planning Time Comparison

Task	Manual Process (Before Automation)	Automated Process (After VBA Tool)	Time Saved (%)
Data consolidation across programs	4–5 hours	1 hour	~75%
Calculation of teaching hours per professor	3–4 hours	Instant (real-time formula)	~90%
Validation and error-checking	2–3 hours	< 30 minutes	~85%
Report generation (summary views, formatting)	2–3 hours	< 45 minutes	~70%
Total Estimated Time (per semester)	12–15 hours	3–3.5 hours	**~72-77%**

6.3 Functional Objectives and User Requirements

To make up with these limitations, the requirement gathering process has started in the first two weeks of the internship. Academic coordinators and program managers had meetings to clarify their work process and current pain points and expectations of a new system. Using this user engagement various functional objectives were formulated:

1. Centralized View: Design a unified worksheet so that all programs and instructors could be observed, filtered and analyzed there.

2. Instructor Choice: Allow the choice of professors to come in the form of a drop-down menu in order to ease the entry of data and lessen errors.

3. Automatic Calculation: Use formulas to automatically compute teaching hours by the instructor, semester and program.

4. Mutualization Tracking: Have synchronization tracking so that it tags courses that are common among programs.

5. Summary Dashboards: Presented in a form of aggregations are the views of total workload, overs, and gaps per instructor or program.

6. Usability: make sure that the tool could be utilized by the personnel that had to know little Excel.

7. Low Maintenance: Construct in order to depend as little as possible on IT infrastructure or third-party software.

These goals concerning Weichbroth, (2022) influenced the formation of what would be called a Workload Planning Template Generator, a VBA enhanced version of an excel workbook, which automates the next steps by gathering, processing, and presenting the workload data within an academic department. Parallel to the official gatherings, the informal observations were carried out in the activities of the department, in particular, in terms of the planning of courses and discussions of the preparation of contracts. Through these interactions, it became easier to gain a better understanding on the implicit user needs that could not always be described during interviews. An example of these themes which kept cropping up was the fact that it was hard to find a way to manage semester-specific loads when professors worked in several programs. A high number

of the staff members had to create temporary summary sheets or manual pivot tables, which displays the necessity to have the capability built-in to manage such semester-related filtering and aggregate loads.

Also, employees were annoyed by the unavailability of validation mechanisms in the available spreadsheets. Data anomalies, which include simultaneously-entered instructor records, unintended deletion of formulae, or unfamiliar program codes, were a given and more often than not necessitated the back-and-forth email clarification. This realization led to data validation methods, e.g. protected ranges, drop down lists, error messages, to be implemented to preserve data integrity as it does not subject the user to greater complexity. This is based on the direct application of user feedback and such refinements were essential towards long-term usability and confidence in the tool.

The last but not the least user need is the possibility to see immediately the workload unbalances in over-assignment and their under-activity. Some of the coordinators reported that in the manual system such imbalances could not be realized soon enough and in some cases, after contracts were already out. It required a real time calculation engine, where total would auto-update instantly with the flow of the data entered, and a conditional color scheme to mark anomalies visually.

One of the needs that was less evident but also essential was the necessity to have the tool that could be compatible with further budgeting processes. In spite of the fact that the major aim was monitoring workload, some users alluded to the teaching hours being utilized in financial projections later. Thus, the tool design was made in such a way that it has architecture based on modularity, i.e., it is possible to add in the future scripts of budget estimation. In a nutshell, collaborating closely on the early stages of development with the user ensured that the tool was practical but also able

to cover cases of future usage, having solved not only the problems of the moment, but also foreseen them.

6.4 Design and architecture of Tools

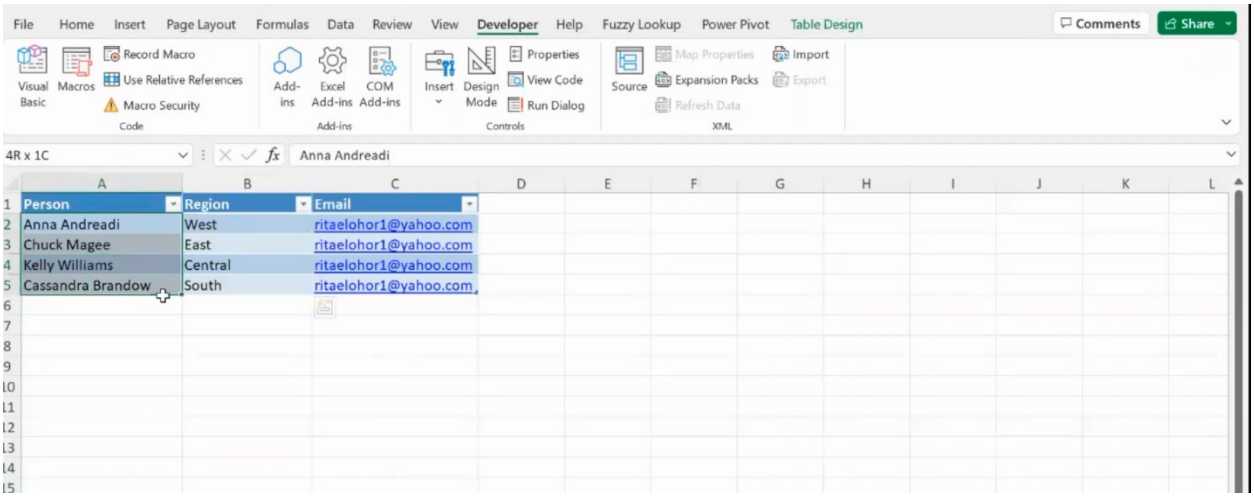
The tool was purely designed in the Microsoft Excel platform, under the Visual Basic for Applications (VBA). It is made up of three main modules:

1. workbook Initialization Module: The script is executed upon opening the work book. It links data using a data file that contains program names, semester structure and instructor list and then loads program names, semester structures and instructor lists and fills the worksheet with correct structures and formulas.

2. Dynamic Data Entry Form: The form interface enables a user to choose an instructor to be selected in a dropdown menu (filled with source data, separated by unique values) and fill corresponding fields entailing information on contract type and teaching status.

3. Calculation and Reporting Module: This module will calculate total hours in a semester, cross-tabulates the data by program and instructor and indicates any departures to regular rules (e.g. over-loaded or under-loaded). It also produces summary per semester and dashboard.

Figure 2: VBA Workflow for Workload Automation



The real-time aggregation logic is a major feature and it is capable of updating workload numbers when data is inserted or altered. The interface of the tool resembles the well-known Excel designs, including color-coded rows, safeguarded formula columns, and custom input cells. Conditional formatting points to teaching tasks that exceed the terms of contractual status or do not have necessary tags. When developing the tool, a specific focus was also made on data integrity. Built in drop downs are used, data validation rules as well as look up functions to validate all the entries. This reduces user entry mistakes and makes naming consistent in the data.

The architecture was deliberately created to take a modular, loosely combined form to aid the maintainability and probe the possibility of upgrade in the future. Every module was created in an independent fashion with particular subroutines and well-outlined input-output boundaries. As an example, the Initialization Module of the Workbook did not only load the static data (such as the names of instructors, program codes) but also applied the formatting templates to the sheets so that the uniform format could be guaranteed even on the local settings of the user. This division of duties aided in minimizing copying of codes and it allowed its easier fault

solving or the augmenting of individual components without translating to the rest of the system.

The Dynamic Data Entry Form was developed as a User Form cell in VBA and had user-friendly features in the form of autocomplete fields, mutualization flags in the form of checkboxes, and lastly, mutualization list in the form of drop-down lists that were populated dynamically on based on the current academic year. All the inputs were connected to a centralized data sheet which served as a backend database capable of ensuring the ability of reflecting to user interface in case core information (e.g. newly hired faculty) was updated. To eliminate the posting of incomplete records, the form was also programmed to eliminate such by using the If...Then statements that ensure that the fields must not be left with null or invalid values before entering the records can be entered.

Figure 3: Explorer (Instructor Selection Interface) Sample (Workload Tool)

The Calculation and Reporting Module used several optimization methods in order to better the performance particularly with increase in data volumes. Temporary data was stored in arrays, instead of going through the worksheet cells; a considerable improvement in reducing run-time lag. Cross-tabulations made with pivot-like applications involving dictionaries and dynamic ranges produced summary tables that were updated almost instantly with the semester totals, teaching load distributions, and overload warnings. This enabled the tool to have both real-time data entry and responsive reporting engine.

As a way to facilitate user confidence and transparency, the comments and explanatory tool-tips had to be associated with the specific fields. Besides, the conditional formatting was context-specific to an institution-such as

making teaching hours above 192 in red or alerting missing tags of mutualization in yellow. These visual indicators allowed the users to easily see inconsistencies to bring down the reliance to centralized auditing and thus increase the decentralization of accountability in handling the workload.

6.5 Agile Development Process

The process of developing the workload tool was based on a three-sprint Agile model, but a week each. Every sprint always started with a planning session, where the priorities were established and the product backlog refined. After every sprint, users would be able to test a working version of the tool, after which there would be a sprint review and retrospective.

Sprint 1 was dedicated to planning the structure of the worksheets, the connection between drop down menus and the creation of the mechanism of loading data. Instead, the aim was to provide the minimal viable product (MVP) capable of simple data entry of a single program.

During Sprint 2 functionality was extended to all programs, semesters, and types of faculty. Real-time calculating was introduced, the addition of the mutualization fields appeared.

In Sprint 3, the reporting dashboard, error-checking functions and user interface improvements in relation to feedback were included. Adoption was also supported by the preparation of a user manual as well as training of the academic staff.

Such iterative process has enabled the capture of rapid feedback, reduced rework and ultimately; the user needs were factored in the end design. Agile approach proved particularly useful in balancing semester timings and last minute framing of the program common in learning institutions.

Sprint No.	Objective	Key Deliverables	User Feedback Integration
Sprint 1	MVP structure and data loading	Base worksheet, dropdown menus	Requested mutualization feature
Sprint 2	Full feature integration	Hours calculation, summary table	Improved formatting, added tooltips
Sprint 3	Final testing and training	Export functions, manual, user training	Added autosave, simplified interface

6.6 Results and Performance Metrics

After deployment the workload tool was tested on three parameters i.e. saving of time, accuracy as well as user satisfaction.

1. Saving time: It took a total of 12-15 hours to put up the master workload spreadsheet of a single semester, with a lot of data consolidation, calculation and checking before automation. This time was cut down to below 4 hours, i.e. 70 percent cut-off using the automated tool.

2. Accuracy: A 3-5 errors per semester were reported averagely on workload calculation in the old system which included over-allocation as well as omitted hour. Since automation happened, error logs would record only a single minor error during the first semester of deployment, but no more.

3. User Satisfaction: After two months of use a short survey was made amongst 5 users (academic coordinators and assistants). Every participant evaluated the tool as either very useful or essential due to better visibility, assurance of the data accuracy, and its convenience. As one of the

coordinators remarked, this tool saved us one whole week of back-and-forth emails.

In addition to these quantitative measures, during and post deployment, qualitative observation also provided other subtle benefits that further confirmed the effectiveness of the work load automation tool. As such, an example of the results of the use of the implemented tool is the expanded collaboration between the academic staff in different departments since the centralized and real-time nature of the tool enabled multiple coordinators to see, and transfer data to the same planning interface due to the absence of version conflicts. It made the communication depend less on unnecessary email chains, as well as better coordinate the scheduling and also make the process of distributing workloads more transparent.

An additional remarkable finding was a decrease in the last minute corrections when issuing the contracts. In the past, the differences between the estimated workload and the contract, issued on the basis of the estimated workload, used to be a problem, not least because on the one hand, some fields needed to be updated quickly and, on the other hand, it undermined the credibility of the data. After automation, it was easier to prepare contracts, where data on the workload was a valid and approved source of the truth. The positive effects of this were a cascade effect on the finance and HR teams in that they were gaining more confidence in the automated outputs feeding into downstream processes which included contract approval and budget forecasting.

This performance review also indicated that users were increasingly becoming more active users of the tool and were eventually becoming data stewards; who began to challenge anomalies, recommend aspects to be improved, and they also took more ownership of the accuracy. The embedded logic of the tool, such as validation prompts and visual information made this cultural change possible by empowering the users

rather than asking someone experienced with technical issues to support them.

Methodologically, the effectiveness of the tool was not just determined by the end performance level but how well it performed at every cycle of Agile sprint. Through the constant development of functionality directly thanks to user feedback, the project met a requirement to ensure that the tool abrogated to actual needs and not the theoretical assumptions. This cycle was vital to keeping the users engaged and adhere to long-term use. The workload planning tool accomplished its original goals of functionality as well as making some unexpected positive systems changes through its contribution to communication, accuracy and institutional faith in correctness of data on administrative decisions. The evidence of its success proves the importance of low-code automation which is promoted upon user-centered design and Agile implementation methodology.

6.7 Problems and Related Lessons

Although the end result of the deployment proved to be successful, there were a number of challenges that occurred during the development stage:

- Standardization of data: the earliest data were full of data inconsistencies including instructor names, program titles and semester codes. Standardization of this data was a hard task that involved much effort and coordination.

- Hesitancy of the User: There is an element of resistance where some of the staff was reluctant to use the new tool since they were used to the manual way of doing things. This was alleviated by training, demonstration of benefits and providing some transition time during which both old and new systems could operate in parallel.

- Script Maintenance: The problem with VBA was that despite the flexibility it gave it also generated a risk of macro security setting and compatibility to the version of Excel. In order to do this this documentation was made and back ups were kept.

A lack of structured documentation and metadata in the initial Excel sheets was also another important issue since it made reversing some of the planning logics painful. As an example, in most instances the workload spreadsheets had custom formulas or hand overrides which was not documented and only known by a limited number of coordinators. This emphasized the necessity of improvement of institutional knowledge capture and the value of capturing standard knowledge directly into automation tool. To counteract it, the VBA scripts were intended not only to be able to do calculations but also to work with inline comments and even audit trails that might be used by later code maintainers or users who are not familiar with the code.

There was also one obstacle that came as a surprise, i.e., Microsoft Office languages and localization. Since ESLSCA was working in a bilingual (French-English) environment, certain users had problems with formulas or scripts behaviour because of regional differences in Excel cell formula names, formats and number formats. An example is the use of comma and the semicolon delimits and various formula notations necessitated slight modifications of the script and instructions to the user. This highlighted the need in testing in various real-user environments prior to complete deployment and developing tools that are resistant to variations.

A lesson was also learnt in terms of management of expectations related to automation capabilities. The improvements were embraced by many users but some people initially believed that the tool would answer all administrative complexities: automatically identify mutually exclusive course assignments or prevent connecting to payroll systems directly. It

was necessary to control the scope creep. The limits were explicitly shared, with training and written instructions, to remind the tool was a decision-support tool, and not an autonomous one.

Lastly, the theme of early and consistent communication with the stakeholders was echoed throughout the project. The issues that may have led to a rise of resistance and confusion were deactivated using sprint reviews, implementation demos, and free-feedback lines. Another good idea was to make some of the benefits of the rollout give quick wins early on, like the auto-calculation of total hours which paid immediate dividends to help to instill confidence in the user. What is emphasized by these lessons is that effective automation is not less about humanistic implementation than it is about accuracy in the technical particulars.

6.8 Future Improvements 6.8 Scalability 6.8 Scalability

Due to the success of the workload tool, there have been some debates concerning the expansion of the tools functionality. What is proposed to be improved may include:

- Connection to the contract generator: Letting workload data to be directly connected to the automation tool of contracts so that hours and program names remain consistent.

Automation of calendar development: The process of filling academic calendars and schedules of instruction using workload information.

- Multi user: Making the tool a multi-user database or a cloud interface that can be used in real time.

Although such improvement efforts may necessitate the migration to more powerful platforms (e.g., Access or Power Apps), the already available VBA-

based tool is a good point of proof-of-concept and will remain valuable in its present form.

The net benefit of workload automation tool was that it would remove the duplication of data entry within the departments. The old system had program coordinators who kept individual records of teaching assignments reporting both a record of mismatch and misalignment in the event of a cross program teaching. As an example, when an instructor was showing classes in both MBA and MSc programs, her or his total workload needed to be manually summed using the two separate sheets of paper. Such aggregation became easy through the automated tool. The dropdown list of professors generated dynamically by using the master planning file enabled a user to instantly bring out the complete profile of instructional activities of an instructor irrespective of his/her program affiliation. Not only was this increase in internal consistency but a time was saved during meetings that were involved with interdepartmental coordination’s.

In addition, the tool included real-time reasoning in the validation of workload. The tool computed gross teaching hours by use of formulas in the excel VBA and cell dependencies, standardized workload correction (decote) and then generating net contractual hours. Such computations used to be done on paper and they had a great probability of being left out or there was a chance of a calculation mistake. This new system not not only standardized these calculations but also, since it held raw data of workloads in input, it was possible to simulate shifting distribution of workload by editing this raw input, e.g. deleting course or altering semester, and seeing totals instantly update. This facet of simulation was especially helpful in scheduling conflicts as well as in achieving equilibrium in workloads of full-time and adjunct faculty.

The other interesting aspect of the tool is the arrangement of the tool using colors and an easy to navigate layout that helped to have quick insights into

the tool used even by a novice. Various blocks of teaching (e.g., Bachelor S1, MBA S2) clearly indicated and overall summaries were arranged in a dashboard form. It was made possible by alternating of colors in the rows, and locking the header, which helped in having a more readable sheet in case it was longer and a user had to scroll horizontally. Minute design features like automatic column autofitting and bold formatting of total rows were part of user friendly interface which did not need extensive training.

Regarding the operational impact, the tool led to a considerable decrease in the number of the emails communications needed to define the workload allocation. Previously, faculty members always used to ask questions concerning their total teaching time or even complain about differences. The program managers were able to respond in a timely manner with high confidence based on the open output and centralized reference of the tool. Besides, the tool could be used to detect imbalances and overload situations prior to the issuance of contracts so that adjustments would be made proactively. This move was a cultural change in the academic operations group since it entailed a shift in the problem-solving approach towards planning.

Notably, the tool also provided the template of the future integration with the digital format. The system also prepared the way to a more database-driven environment by the consistent arrangement of the data and the incorporation of formulas on locked sheets. The workload tool in this respect resembled an operational solution as well as a transistor digital artefact between manual systems and the comprehensive information management systems.

Conclusively, user responses validated the position of the tool in regaining confidence and enhancing communication. The calculations were simple and calculators felt liberated to make qualitative schedule-related decisions instead of going through the arithmetic upheaval. The workload automation

tool has proved that the well-considered, take-user wise BPA systems are capable of solving problems in academic administration (technical and relational).

Chapter 7: Automation System of Contracts

7.1 Justification of Targeted Scope of Automation and Tools

Generating faculty contract is a very key administrative activity in all institutions of higher learning. Agreements regulate teaching, grant the terms of compensation and compliance with the employment laws. At ESLSCA Business School Paris, until then this process was done manually with Microsoft Word templates, fed with data copied off several Excel files. When done in small quantities this process was manageable but the number of programs, faculty members, and semesters began to increase the process became inefficient and prone to mistakes. The problem with names, teaching loads, and hourly rates caused delays and the likelihood of compliance problems. This chapter records the work on the creation and implementation of Contract Automation System, which works with VBA programming in Microsoft Word and Excel to perform dynamic generation of individual faculty contracts. Development of the automation system, as the component of the internship project, is the direct reaction to the periodic administrative pains observed in previous chapters.

Application of Agile Project Management concepts made this tool be designed, tested and refined during three development sprints. It was not enough to provide the automation of contract generation, but to create a scalable, user- and legally reliable system that will help diminish the administrative overhead and increase the precision of operations. The chapter provides the first challenges, technical and functional design of the tool, its development process, performance outcomes, and information on the feedback of stakeholders concerned about its uptake.

7.2 Pre-Automation issues in Contract Generation

Faculty contracts at ESLSCA were produced manually, it was a laborious exercise without automation. Every quarter, the academic operations team would pull data out of excel-based planning spreadsheets (names of instructors, assigned programs, course names, number of hours, and hourly rates) and would incorporate the information in standard word templates. Although these templates were in a similar structure, they had to be edited manually on a per contract basis, usually involving Find and Replace or copy-paste. This was a routine each semester of preparing dozens of professor contracts each semester taking between 15 to 30 minutes each to prepare.

A number of systemic problems were caused by this process. To start with, the inconsistencies in data caused using wrong names, program titles or rates of payment in contracts. Second, typed letters imposed the problem of formatting and layout especially when the course list was longer than anticipated. Third, the system did not validate anything and thus failure to match information that was to be on planning sheets with contracts was not automatically detected. Fourth, standardized workflow in contract tracking was also absent and as a result, there was issue in version controls when revision of contracts was sought. Also, contracts were to be prepared in several languages, mainly French and English, which introduced even more complexity. After the deployment, there were almost no errors, and the only reported issue was a relatively small one: a conflict during the formatting of names, which was also immediately fixed, with better handling of strings in the VBA code.

Table 5. Contract Preparation Error Log

Error Type	Frequency (Before Automation)	Frequency (After Automation)	Comment / Source
Incorrect instructor names	3 cases per semester	0	Result of manual copy-paste from Excel
Mismatch in course assignment	2–4 cases	0	Automation ensured data pull from validated rows
Wrong hourly rate applied	1–2 cases	0	Rates now fetched dynamically per professor
Incomplete teaching load representation	2 cases	1 minor instance	Early version lacked cross-check—later resolved
Formatting/layout issues	Frequent	Minimal	VBA preserved layout; updated during Sprint 3

Such inefficiencies had downstream effects on the HR, finance, and faculty on boarding. Contracts sent late or incorrectly destroyed professional faith, slowed the inscription of adjunct professors, and in some cases necessitated a complete reissuance of the contract. All these pain points were reasons to use automated and integrated software that will enable generating contracts based on planning data with minimum human interference.

The course mutualization was one area in especially every bit time-consuming, as an individual course could undergo various programs bearing slight deviations in codes or names. This in the manual system was a common occurrence that would end up with similar courses updated in the

same contract yet under different programs. Such conflicts in planning sheets and contracts could hardly be detected and solved easily, as in order to accomplish this, manual cross-checking between planning sheets and preceding versions of contracts were obligatory, raising the possibility of forgotten elements and other possible conflicts about teaching loads or wage discrepancies.

In addition, no centralized database or even integrated tool to trace the versions of the contracts, or the stage of approval also did not exist. Word documents were regularly created, and in general emailed as an attachment and left on local PCs by various departments (Academic, HR, Finance), without standard file names or security of access. Such a piecemeal approach complicated the issue of identifying a final version of the contract to be signed and by whom (not to mention the question of whether the agreed-upon terms were equal to the approved teaching plan). Consequently, change in contract terms was not a new phenomenon, late in some cases, it left contract changes to the eleventh hour which often brought about misunderstanding among the parties involved, delayed faculty hiring, or even delayed salaries.

There were practical challenges over language localization as well. Since ESLSCA also has international members of faculty, and works in English and French, a contract was to be made in either of the languages depending on the preference of the recipient. This necessitated copying templates and doing manual translation or checks- adding up to more possible inconsistency, particularly in cases where modifications had to be done in a time-strained situation. Such little details as the mismatch of terms in course titles or the term of a contract resulted in questions that had to be followed up by the administration.

On the institutional level, these difficulties were a manifestation of a larger problem regulation by individual knowledge and manual implementation.

There were no written processes and no common monitoring system making the whole contract process rely on the detail orientedness of the individual staff. Departments were like a chain reaction to any absence, miscommunication, or oversight. These operating risks coupled with the high number of contracts being produced at each semester highlighted the immediate need of a standardized contract automation process and process that was given the digital push to make it much more efficient, error reduction, and overall reliability of the institution.

7.3 Needs of the Users and Design Goals

In order to make sure that the tool would meet the actual need of its user, a research on requirements was carried out and HR personnel, as well as program managers and academic coordinators were listed as key stakeholders. There arose a number of design goals:

1. Professor Select Interface: Bring up an easy method of choosing a professor by using a validated list as opposed to keying the instructor name manually.

2. Dynamic Data Retrieval: Retrieve all the available data i.e. assigned programs, courses, hours and rates, directly through a central excel file.

3. Template Integration: Keep the existing legal and stylistics form of contract, but enable a dynamic population of data through book marks or placeholders.

4. Flexibility in Language: The ability to handle contracts in French and English adjusting the contents according to the available language characteristics.

5. Data integrity: Automatically validate totals of volumes of teaching hours and programs names against the planning sheets.

6. Output Management: Store created contracts under a specific convention of naming them and have it stored at a predetermined directory.

These requirements became the practical basis of the Contract Automation System that will be composed of a Word-based form linked to Excel data warehouses with the help of VBA scripting.

7.4 Structure of Tool and VBA Logic

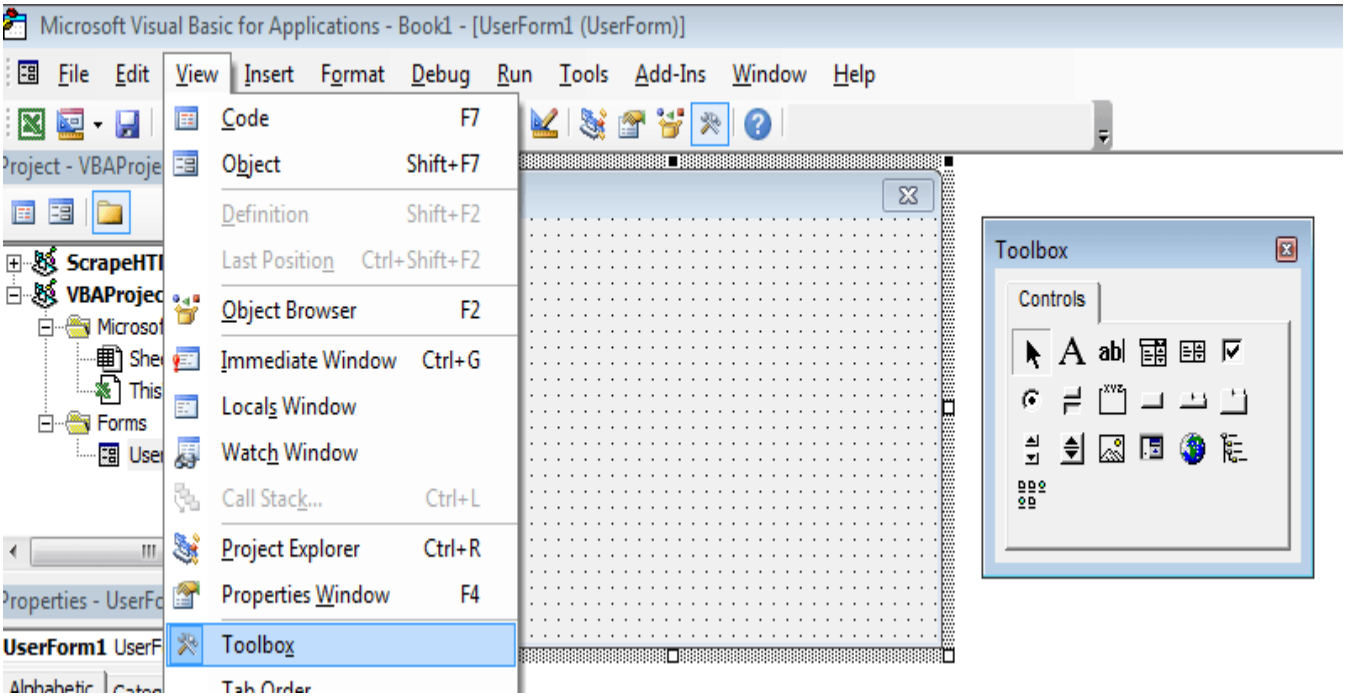
Contract Automation System encloses three main elements:

1. UserForm Interface (in Word VBA): after opening the contract template, the user is shown a drop-down list with all instructors available, and it is dynamically added to the source Excel file. As soon as an instructor is chosen his or her name, nationality and other qualities are completed automatically. The interface minimizes typing and makes names uniform.

2. Excel Data Source: The entire teaching plan per professor sorted by program, semester, course name, number of hours and rate per hour is included within the master planning file. This information is the basis upon which the tool creates a teaching table in the contract.

3. Dynamic Contract Template: The word file contains placeholders (e.g., «NomPrenomEns.»: nomprenomens, «Volume horaire», «Tarif horaire») which are filled with real values with the help of VBA scripting. The instructional table in a detailed form that includes all of the related assignments is created in a customized function,.

Figure 4: Contract Generation Process Flow



There is a sensible logic to the script offered by the tool:

- Open the source Excel file as read only file.
- Find every row whose name the chosen professor.
- Pull out nationality, allocated programs, semesters, courses, hours of work and remuneration.
- Placeholders are filled up and the teaching table added.
- Save the agreement according to a pre-established folder and with the following naming format CDDU_LastName_FirstName.docx.

It will have robust error handling where missing data will be tackled, unmatched names, or formating errors are solved. Also, the tool is set to maintain the document layout and legal formatting so that the final results do not contradict the HR standards. The code was designed in terms of subroutines and custom functions; each has definite roles to implement in order to create stronger modularity and maintainability. As an example, the data pull using Excel was contained in a separate FetchProfessorData()

method which had the advantage of not cluttering the main script and possessing the ability of being used again at a later point within other templates or reporting functions. Likewise the production of the teaching table was also reduced to abstract mode in the form of InsertTeachingTable() that is a formula to accept different normalized listings of courses and update rows and columns in Word table as parameters dynamically. This structure was able to make the script adapt to differentities in the workload and not to fail in preserving formatting and table size added to the table in the Word limitation.

User form interface has been constructed with the user experience. It supported autofill, column-anchored drop-down lists and internal validation, so that the contract was not created until all of the fields that needed to be selected had been selected. The dropdown was also driven by a two dimensional array that was exported out of excel to allow quick rendering of large number of profs. To reduce the possibility of errors a bit more, the form had metadata columns (e.g.: last name, first name, nationality) hidden which were passed to the script silently without user intervention which helped define the consistency of data in various fields.

The Excel Data Source was maintained in a standardized format, the headers and groupings were clear and there was a standardized vocabulary, especially when it came to such key fields as semester codes, mutualization flags and contract types. This hierarchical technique allowed one to refer to the correct records and reduce the level of cell location or hand formatting dependence. There was also a summary sheet in the source workbook that showed the list of professors and a status tracker of generated contracts that can provide the actual picture of the progress which minimizes the wastage of effort because of duplicate works.

In terms of compliance, the dynamic Word template was created in coordination with the HR department in the process of meeting the norms

of the institution and the law. The usual formatting of headers, footers, signature blocks, and clause text was locked and only text in placeholders and teaching tables could be edited through editing code. This secured the formal layout of the document whilst still providing the possibility to add customized contents.

To support the bilingual purpose, conditional logic was introduced so that contracts may be made in French or English depending on the preference that was recorded in the source Excel sheet. Select Case statements in the script were used to switch among language templates and to translate key phrases to ensure that the tool was multilingual compliant and that, once created, no extra manual versioning effort would need to be applied.

Lastly, error handling and user feedbacks were implemented. An example would be where the non-existence of a match in the excel database would trigger a message box to inform the user and record the occurrence into a local error report. This traceability meant that data anomalies could be traced, and successfully corrected within a reasonable time resulting to an increased faith level of the institutions on the reliability and sustainability of the system.

7.5 agile Development and Iteration

The contract system was built in three Agile sprints under the Scrum instruction. All the sprints were geared with specific deliverables and the stakeholder feedbacks:

Sprint 1: Created the form of instructor selection and connection with the data source at Excel. A sample MVP was sent to HR to comment.

Sprint 2: This included additional types of dynamic table generation and a test of the contract with various language usage. Concentrated in fixing consistency in formatting and accuracy of data.

- Sprint 3: Added user instructions, error-handling and other finishing touches on user input (e.g. autosave option, checking filenames for errors).

At the conclusion of every sprint, there were a demonstration session and real-life testing by using real data. Any feedback was documented and turned into the backlog items of the next sprint. The iterative delivery cycle was something that kept the delivery incrementally better and what enabled the team to promptly act in favor of changing requirements.

The implementation of Scrum approach advanced the project in a discipline and contributed to flexibility. Every sprint was about one week, and planning sessions were performed at the beginning of a sprint and sprint reviews along with retrospectives at the end. The cross-functional team of the project was tiny but oriented: it represented the intern-developer, the HR coordinator, and the academic operations personnel performing the functions of product owners and end-users simultaneously. This very close feedback loop made it possible to validate and adapt features quickly.

In Sprint 1, the focus was on presenting a functional prototype of the interface allowing selecting instructors and checking the correlation between the Word UserForm and the source excel file. The challenges faced in this sprint were consistent format of instructor names in different files, management of accented characters in the names and setting excel to open in background (invisible) mode so as not to disrupt the user. MVP presented after this sprint was able to retrieve the selected set of instructors and present them on the form, but no real population of contracts took place in this situation. The first feedback that HR gave was that the field of nationality must be automatically completed to minimize the manual filling of that field, which was introduced in the backlog of Sprint 2.

Sprint 2 was devoted to the structure of the content of the contract, dealing with the creation of dynamic tables, a multilingual layout, and an agreement

between the form of a page. Construction of a dynamic teaching table that would accommodate changes in the number of courses per instructor and not compromise the layout of the page or design of the contract was one technical issue. This was done through programmatic addition of table rows, fixed widths and use of same paragraph formatting. Bringing an additional layer of conditional logic to alternate French contract template and English contract template depending on a field of the Excel database was another improvement. The test runs using the real faculty names were done to determine if the tables inserted were in legal format and the readability of these tables. HR feedback also noted some minor spacing corrections, as well as the preview feature that they would like to see added so user can see contract and save. This was put off to Sprint 3.

Sprint 3 was dedicated to the optimiziation of the user experience and to the hardening of the tool to be ready to be used operationally. Some of the features that were implemented were to check the file paths (so as not to accidentally overwrite a document), autosaving mechanism and error messages that did not just say that something went wrong, but also gave some potentially actionable suggestions (e.g. in case of an Excel file it might say: check that there are no missing fields in row X). A PDF version user manual was also compiled and sent through a shared institutional drive, as well as a training video composed using a screen recording software. This went a long way in facilitating training and making sure that even employees that had little experience with VBA would be able to utilize the tool efficiently.

Every sprint was to be ended with the live demonstration, normally with the duration of 30 minutes. It was advised that stakeholders should experiment with the tool on real-time input with live facts of the academic planning files. They were noted down along with their suggestions which were entered in the Trello system as backlogs. The Agile board had three

columns; To Do, In Progress, and Done, where it was updated daily in order to be transparent and moving ahead. In the retrospectives, the team talked about what was good, what was bad and what could be done better. A primary lesson learned was that small frequent releases are important as compared to large releases that are monolithic in nature. The training was conducted to help the users develop confidence in the tool gradually, as well as minimize resistance to a sudden change.

Agile introduced by the iterative process, based on collaborative analysis and iterative design, helped to provide the contract generation system that would succeed in a non-technical aspect, i.e., could adapt to the internal workflows and user demands of an institution. At Sprint 3 completion, the tool had become a stable system that had acquired all the features necessary to be deployed in the institution and a roadmap of future updates and expandability was ready.

7.6 Outcomes and quantifiable effects

The contract generator was also evaluated after its implementation with regards to its usability, accuracy, and efficiency.

- Efficiency: There was a reduction into preparation of average time of a contract which was 20 minutes to less than 3 minutes. In the case of a large number of professors of 30, the combined time of processing decreased by 85%, or in other words, the time spent went down to 1.5 hours compared with 10 hours previously.

- Accuracy: During the pre-deployment period error logs indicated that errors occurred in about 4 of the 30 contracts (spelling, wrong hours, unaligned programs). The error rates following deployment fell to less than 1 in 30 contracts with the majority of errors being due to source data being out of date and not script issues.

- User Satisfaction: The qualitative comments on HR personnel and academic managers were very optimistic. As one of the staff members put it, this tool took away the most stressful thing of my semester. Now, I will be able to spend time reviewing the contracts instead of developing contracts." The other one is the increased confidence in the contract data and decreased revision requests by the faculty that has been noted.

Their time to comply and audit preparedness also increased because the contracts could now be created using a source of data that could be validated and traced and the location of contract files stored centrally and had standard names. Besides the time and accuracy savings, a few qualitative institutional advantages of the adoption of the contract automation system also emerged, which were not associated with mere process measurements. Among such advantages was the fact that there was a very significant improvement in the coordination of the various departments, especially that between the Academic Operations, the HR, and the Finance departments. Before the era of automation, conflicts in the contract data used to cause tensions and the reactive loop of the process of corrections which used to negatively affect the relationship between these departments. Post-deployment, the uniform, validated dataset would be accessed and shared, so that terms of the contract could be checked and agreed upon before any party could come to a final approved state. This helped the culture of unity and openness.

The uniform and centralized nature generated as well made the compliance process easier to the internal policy as well as the external audit needs. Having standardized the naming conventions and putting all versions of the contracts in a specific network folder made the retrieval (audit or legal review) a much easier and faster process. The HR personnel indicated that in a recent check-up on compliance, faculty contract retrieval speed became roughly 15 minutes as compared to hours before. This traceability, made

possible through the script that instantly named files (CDDU_LastName_FirstName) and directory, not only saved time but also enhanced the institutional confidence when undergoing a formal review and audit.

Other effects were the psychological stress on employees, particularly when there were high enrolment rates. In the past, the employees could spend many hours in manual creation and review of the contracts and they could be made to work late or during the weekend in order to accommodate the deadline components of onboarding. This issue was reduced with the help of an automation tool, which enabled generating contracts in batches, and in real-time, pop-up windows with error messages and the confirmation of the user were set, which allowed correcting errors at an early stage of the construction. Workers said they were less overwhelmed and more in control and many said their job satisfaction had increased as a result.

Noteworthy, the tool was future-compatible and modular, which was enabling HR to make only slight changes in content (e.g., changing the rates of payment, the law amendments). This flexibility was able to give power to non-technical users who could then manage and maintain the system post-deployment and minimized weight on developers. The associated training documentation that was developed as part of the tool, as well as walkthrough guides, also went down well and a number of staff made particular reference to the clarity of the on-boarding process, not least when colleagues transferred to a different part of the organization.

The quantifiable results also helped in higher strategic goals. The automation tool also enables senior managers to redeploy human resource in more analytical and developmental roles, like workforce planning and faculty development by minimizing error levels and releasing staff time. In that respect, the tool did not merely enhance an operation process, but also

led to institutional positioning of administrative functions, as it transformed them to strategic rather than clerical.

The feedback by faculty members, which was indirectly gathered was also positive. Reduced error rate in contracts and significantly shorter turnaround rates made bringing on new instructors less painful, with additional faculty returning to the fold with their paperwork getting in their hands in a more timely fashion. Professor anecdotal observations implied increased confidence in the professionalization of the institution, one of the most important reputational resources in the competitive academic market.

Finally, multilingual contracts, as well as the contracts correspondent with the legal formatting requirements, enhanced the multinational preparedness of ESLSCA. The two-language functionality was a rather essential attribute that the International Programs team recognized, particularly, as it concerned the work with adjunct faculty in other regions. Overall, not only were these product effects measurable across operational, cultural, strategic, and reputational scales, but the case study also shows that properly focused digital tools effectively executed with Agile and user-centric methodologies can be used to successfully transform an institution as a whole.

7.7 risks and Challenges

Along with the success, a few challenges and risks were found during development:

- Problems with Data Format: The variations in the data format (e.g., names of professors who have accents on the names or extra spaces have created a problem of mismatching of the

data between the Excel and the Word). This was reduced using the string normalization methodology.

- Access Constraints: Macros are blocked, especially in the computers of some users because of some security consequence to their internal policies. IT support was needed to allow running of macros and whitelisting of script.
- Script Maintenance: Like any VBA driven tool, the tool is vulnerable to upgrades in the version of Office and changes in template structure. A maintenance guide was developed to enable future users modify the script where need be.

Language Barriers: Automatization of bilingual contracts increased the number of difficulties. A localization is made possible even though the current version is only in English and French; there would be a need to observe the right naming and coding discipline to prevent corruption of the template.

The issues illustrate the factor of strong documentation, version control, and explicit users will, all of which were provided in the final deployment package. The final critical problem, which arose at the development stage was the rigidity of object model in the Word with respect to creation of teaching tables dynamically. Word that involves formatting, inserting of rows, and preservation of layout is relatively complex to handle as compared to Excel that involves cell-based operations which are fairly simple. As an example, when a professor was scheduled to teach more than ten different courses in many programs, the teaching table sometimes extended on a second page in the layout breaking the alignment of signature blocks and disclaimers. This had to be fixed by narrow control of paragraph spacing, table padding and row height, which drastically raised the complexity and time quotient of the scripts. It also highlighted the fact

that visual formatting in Word-based automation requires much more delicate management than it is usually expected.

The other operational risk was relying on a single data source in Excel which was required due to consistency but could have been another single point of failure. The path to the file provided in the script would not be updated which would break the automation process in case the source file was edited, renamed, or even moved. As a countermeasure against that, the tool was implemented to store the last known file path in a hidden field and offer to re-select the correct file in the event that the source would not be found. However, such dependency poses a constant risk that should be controlled properly with the help of regular backups, file permission checks, and trainings.

One more minor challenge was the overconfidence of the user of the automation tool. As soon as the tool proved to be highly reliable, users started presuming that each contract that follows the program is perfect and did not review it manually. This caused a small issue that a slight mismatch in course names (the final program change) was not caught before it worked its way into half a dozen contracts. This experience also renewed the need to remember to keep human in loop especially at areas where there may be a downline legal or monetary effect. To remedy this, post-generation review checklists were introduced, and the critical role users should not be nation out of jobs because of automation; rather, automation should supplement and not substitute professional judgment (Fernando, (2025).

It also had some organizational learning curve issues, especially of those having little experience in using macros or who were wary of digitalization. Most users gradually caught on to the tool, but early adopters became important evangelists of the powers of the tool to their fellow users. They were able to contribute to the buy-in because of sprint review demos and

the involvement of feedback loops. This is an indication of a larger truth about change management: tools are successful not only due to the technical soundness of their functionality, but due to social adoption and cultural preparation.

And in addition, the bilingual capacity, although a powerful aspect had its own sets of risk such as in terms of the misalignment of the template as well as the non-uniformity of translation. Placeholders have, in other instances, been left untranslated through inadvertent omission in the final contract generator, or because the incorrect template has been loaded because of oversight by the user. In order to mitigate these risks, a drop-down list whereby the user has to select a language before the script could run was added to the User Form. Also, the string literals were centralized in language-specific dictionary, which allowed greater control over translations and lowered the risk of a partial language mixing.

Finally, the problem of scalability restriction also appeared as a future issue. Although the present-day VBA-based solution performed relatively effectively as far as the extent of the operations of ESLSCA is concerned, further developments of the institution or the more significant number of contracts may make it difficult to operate in the long run. The script is fine tuned to tens of contracts per cycle not hundreds. it may be necessary to migrate to a more scalable system (e.g., SharePoint, Power Automate, or made-to-measure web apps). The existing system was, however, a good proof of concept, having shown feasibility as well as requirements of functionality of any such transition.

These difficulties show that the process of automation, though successful, still needs constant monitoring, education of the users, and support of the infrastructure to retain its efficiency. The ensuing lessons confirm that technological innovativeness should always be partnered with intelligent governance in the operations.

7.8 Future Development

The automation system of the contracts can be expanded and applied in more spheres. Future enhancement may be made to:

- Workload Tool Integration: This would make a direct connection to the workload generator and experience would be minimized because an appropriate contract would be not dependent on obsolete planning information.
- Batch Preprocessing: Making the tool allow generating multiple contracts in a single run of execution but using a filtered list of instructors.
- Cloud Deployment: Transferring the tool to a SharePoint system or a Microsoft 365 platform enabling more people to use it and apply multi-user mode.
- Digital Signature: Incorporating digital signature that would facilitate delivery of e-signatures.

Automated insertion of dynamic teaching assignment table was one of the most crucial innovations brought in by the contract standardization tool. This table was simply based on planning database generated to give the exact outline of the course assignments as was shown in the academic planning file of the institution. Before automations, tables in contracts were copied or entirely built-in individual by individual case basis with regard to professors. The dangers of such practice were an authorship of incorrect names of courses or assignments missing or containing no more current information. Using the new VBA enabled system, in some systems it encoded this table to be dynamically built as the contract was generating in real time, so that it could match the source information to the end result document, as the contract. Not only this increased accuracy but it allowed a presentable workload representation in a professional manner.

In addition, this automation tool enabled context sensitive customization which was formerly a manual intensive editing. In response, nationality or language of the instructor affected some of the language or the provisions of the contract. The nationality of the professor was noted in the Excel source file and imported into the automation process where it filled the suitable holder in the form of the Word document. This has avoided the fixing of various copies of the contract template and chances of wrong wordings or jargon and vernacular of the law. The tool is set up now to work on the French and English formats, but has a modular code that enables it to be expanded in future to work on other languages.

The interface of the form used by the tool was critical in making the tool user friendly and eliminating key entry mistakes. Instead of requesting the staff to manually enter names of instructors into the form, which would be filled with possible errors, such as typos and mis-matches between the form and the database, the form offered a validated dropdown list constructed with the database in excel. The list contained full names of each of the professors in a standardized format; we were able to avoid discrepancies due to the inconsistencies of names entries. Moreover, the validation logic contained in the form prevented the creation of a contract without a valid selection, thus imposing a basic quality of the data.

Another application that introduced creature comfort of a strategic nature was the automatic file naming and saving procedure of the tool. Upon creation of a contract, the script preserved the document with a structured naming (e.g. CDDU_LastName_FirstName.docx) in a specified directory. This reduced confusion over which version of a file to use, made it easy to archive files and allowed multiple files to be addressed together, e.g. printed, emailed or uploaded to HR systems. This feature appears to be so simple but it came in handy as faculty volumes built up to keep the records in an organized manner and without the duplication of documents.

Electrically, the tool also allowed more audit trail. The decisions that were traced, teaching loads that were confirmed, and contract terms that were confirmed were easier since the teaching data that fed into each contract was sourced to a centralized, version controlled, excel. Such transparency was especially significant at the time of contract reviews and annual reporting. HR and academic leaders became comfortable that the figures they saw in the contracts were correct and defendable, representing the most current institutional data available.

Lastly, the automation system of the contract led to a wider cultural revolution. It has broadened essential staff time to more advanced roles like policy review, contract negotiation and faculty support by automating time-consuming administrative activities. It was also a promise of operational superiority and digitalization- the two pillars of institutional competitiveness and faculty retention at a rapid-developing academic showing.

Chapter 8: automation of Budget Forecasting and Academic Scheduling

8.1 Budgetary Environment and Situational Problems

The main features of the institutional planning in higher education are budget forecasting and academic planning. Collectively, they influence decision-making in resource allocation, use of resources in distribution of faculty, and fulfilment of programmatic obligations within financial limits. Such steps were traditionally addressed by disparate spreadsheets in ESLSCA Business School Paris, like in most of the other such institutions, and the spreadsheets were commonly managed manually by respective coordinators. These budget predictions were derived by combining data based on many different sources: faculty work load plans, hourly teaching rates, course distributions, and program arrangements, each capable of readily changing and of being inconsistent. Meanwhile, academic scheduling necessitated close coordination of semesters, shared courses, semester to

semester inter-dependency of courses and programs. This chapter captures the growth and implementation of the Budget Forecasting and Scheduling Automation Tool, the third and last column of Business Process Automation (BPA) project realized at the internship (Nasr& Asharee, 2024).

This application was intended to present an effortless, real-time validated mechanism of consolidating important academic and monetary information. It helps the employees make precise and current budget forecast by drawing directly on planning data and using consistent logic. The chapter specifies the issues with functioning experienced prior to automation, the way of development, the technological composition of the tool, and the practical results achieved afterward.

8.2 Automation Process and Difficulties before it

The activities of budget forecasting within ESLSCA could be described as manual gathering of data, incoherent and scattered spreadsheets, and inaccurate calculations. Every academic program had its separate set of teaching assignment files providing information about the courses, instructors, the amount of hours, and rates of payment. Program managers would copy data into a master budget file to allow them to create budget forecasts based on the sheets. It was then evaluated at the Finance Department to come up with semesters and annual cost estimates with reference to this file.

There were some key challenges to this process:

1. Irregularity in Data Formats: SPD differed in column headings, data-input formats, and nomenclature which made data-consolidation hard and time-consuming.

2. Common Human Errors: There were errors in the total hour calculation, wrong pay rate and duplication of entries since employees had

to do manual copying. These mistakes were not always simple to notice and evenEST elongate budget estimates.

3. Absence of Real-Time Updates: The modifications to the workload assignments could not get reflected automatically into budget files and the staff had to update them with a number of documents independently.

4. Poor Transparency and Reporting: Reporting was not normalised so that, forecasts could be viewed by program, instructor, semester or cost center. This was an impediment to strategic planning and good reporting.

5. Poor Treatment of Special Categories: Such components as soft skills modules, mutualized-courses and teaching contracts with permanent employees could not be clearly identified in the budget, due to which a detailed examination became complicated.

All these problems compounded itself with a budgeting process that was not only time-based but was not as accurate and responsive to timely decision-making. Since the school had been growing and expanding to provide different services, automation of a scalable system was imperative.

8.3 Purposes of the Automation Tool

The idea behind the automation tool was to simplify and uniformize the budgeting process and at the same time enhance data integrity and strength. Having conducted preliminary consultations with academic and finance personnel, the given objectives were established:

- Centralization: Bring data of all programs into one dynamic template having standardized formatting and validation rules.

Automated Calculation: Utilize formulas to automate how teaching costs are calculated; use program specific rates of pay, amount of course hours taught, and whether staff is permanent or adjunct.

- Graphical organization: Add headings, color coding and individualization of budget items (i.e. soft skills, mutualized courses, sessions on software) to make it reading worthy.

- Scenario Flexibility: Allow employees to enter changes in parameters (e.g. hourly rates or number of sessions) to be able to calculate their effect on the total cost in real time.

- Mutualization and Cross-Program Analysis: Flag courses are common across programs and they accumulate their budget values across programs.

Export and Reporting: Prepare output that can be used easily to present, audit or annual reports.

This list of requirements formed a basis of a version of a functional specification that informed architecture of the tool and the VBA codebase.

8.4 Architecture of the tool and logic of functions

The Budget Forecasting and Scheduling Tool was written in Microsoft Excel and it has a powerful VBA script called CreateAndFillTemplate. In the script, the master course planning spreadsheet is accessed and a large number of data lines are run through it to produce a well organized color linked budget report.

The rationale of the script is as follows:

- Data Extraction: On the source workbook, go to the sheet with the name of Export and loop all the rows by iterating since the second row.

- Filtering and Categorization: Take the most important attributes by row and include program name, course title, amount of hours taught, instructor status, and tags on mutualization.

- Dictionary Storage: implementing dictionary objects to store values of teaching time, permanent personnel time, soft skills budget, ECTS points and software sessions. This allows aggregation within a program.

Import to Template: Transfer the findings to the sheet of the Budget Template, having a separate column dedicated to a specific category (e.g., VH, VH Permanent, ECTS, Budget, TC, Soft Skills).

- Formatting: Highlight rows using alternate color and do bold and headings in the same way and auto-fit the columns. Put in a validation logic so no program can repeat itself.

The resultant product is a neatbudget table that indicates total estimated teaching hours, ECTS, and the costs attached to the same per program. The tool differentiates the use of direct teaching, mutualized sessions, and soft skill components and provides the administrators with the option of drilling down into the budget structure.

8.5 Implementation of Agile and the Sprint Break Down

Similar to the rest of the tools, the development took place in an Agile manner where the sprints are performed weekly:

Sprint 1: Established the simple logic of the dictionary on data aggregation. Established a connection with a source file and test extraction of important fields.

Sprint 2: Reformatted output and added conditional colouring, and wrote routines to handle errors. They introduced flags of mutualization and soft skills.

Sprint 3: Reporting functionality was implemented and live data was tested and the export functionalities were introduced. Ensured that a user guide and walk throughs with the academic staff were conducted.

The user feedback played significant role throughout the process. As an illustration of this, program managers demanded that courses involved in software be isolated in order to enable improved cost analysis as opposed to the normal teaching. This was included in the sprint 2. The finance staff also asked mutualized classes to be flagged so that they would not be counted twice in the budget and this gave rise to the TC (transversal course) logic in the script.

This step-by-step process of development proved the tool developed to be prepared according to institutional realities, rather than theoretical theory only.

8.6 User Comments and User Feedback

In post-deployment, the budget tool was compared with the processes in the past through three performance indicators namely efficiency, accuracy, and usability.

- Efficiency: The time to create a teaching budget to cover a semester reduced to roughly 1/6 of time needed to create the same (an increase of above 80%) The personnel did not have to aggregate on an individual basis or manually aggregate costs on spreadsheets.

- Accuracy The tool minimized accounting mistakes, particularly in the calculations of pay and aggregation of categories. The error rates decreased

to almost zero as low as 2-3 errors per report and the anomalies are ruled out using validation rules prior to the output.

- Usability: The staff found the tool on a par with satisfactory scores in post-implementation surveys. They liked the possibilities they had to vary the inputs (e.g., hourly rates or hours) and see immediately the difference. Quoting one of the academic coordinators: “Now we get the whole of our academic budget on one page, color-coded and transparent for the first time.”

Decision-making was another area enhanced by this tool where a simulation of a budget situation could be achieved in a timely fashion. Administrators would be able to determine the effects of new program implementation or change of teaching format (e.g., in-person vs online) without re-constructing full spreadsheets. There was also enhanced accuracy of budget projections.

Table 6. Budget Forecast Accuracy Rates

Evaluation Metric	Before Automation	After Automation	Improvement Noted
Errors in total teaching cost calculations	3–5 per semester	0–1 minor instance	80–95% reduction
Misclassification of soft skills/mutualization	Frequent	Rare	Improved categorization via tags
Duplicate course entries in forecasts	Occasional	None	Controlled through dictionary-based logic

Evaluation Metric	Before Automation	After Automation	Improvement Noted
Revisions due to versioning or mismatches	2–3 per budget cycle	None	Single-source data pull eliminated mismatch
Audit compliance readiness	Inconsistent documentation	Fully traceable reports	Enhanced reliability for finance and oversight

8.7 Risk assessment and Mitigation plans

Some of the risks that were raised in implementation included:

• Data Errors: Variability of data in the source file (e.g., blank cells, different formatting) resulted in early failure of the script. Pre-processing of the data consisted of cleaning routines and inserting fallback values.

• Access Control: Since the tool is connected to a shared drive, there were times when error in defining the file path and access controls resulted. This tool was further enhanced to permit the user to browse/select the source file outside the tool.

• Maintenance Overhead: During future upgrades to the design of course planning, the script may be broken. To deal with this a maintenance guide was developed and employees were trained to adjust minor changes on their own.

• Over-Relying on Excel: Excel was an easily available tool but can in no way be compared with a relational database. As the programs grow, there is the need of an eventual upgrade to a more addressable platform (e.g. Power BI or Microsoft Access).

8.8 A Strategic Impact and Institutional Benefits

Effect on strategic level the impact of the budget and scheduling automation system did not end with the operational benefits. It enabled the institution to:

- Better Allocation of Resources: Decision makers could better allocate teaching hours and costs by program and semester, as well as optimise their course offerings and their staffing.

- Increase Transparency: Transparency was promoted by good documentation and standard outputs facilitating compliance, audits, and accreditation visits.

- Facilitate Strategic Planning: Administrators would be able to use the tool to simulate the budgetary effects of new programs or new models of teaching, useful in the long-term planning.

- Enhance Professionalism: The organized reports built a face of professionalism of the academic department making the stakeholders have an easiness to experience clean yet precise data productions.

The tool was part of a larger cultural change that supported a more active data-driven management in the academic team. One of the major benefits brought by the budget forecasting tool was that it enabled consolidation of cross functional financials information into a single decision making system. In the past, the program budgets were prepared in silence and had no central store where academic, HR and finance personnel could work on the same data. The implementation of the tool meant that all the stakeholders were now using a singleton in Excel-based setting where VH (Volume Horaire) rates, ECTS credits, permanent staff hours, and budget ratios are calculated and displayed program through program. This one point of reference eliminated confusions drastically and gave an ever required blanket of consistency among the various administrative units.

Further, the organization of the tool was specific to support the limited applications to the nuance of the specialized types of courses as related to Jimenez, Afonso, & Fernandes, (2020). As an illustration, soft skills were done at rates of higher per hour by an external coach who also had to be assigned special allocation codes. These were tabulated and summed under a non-sectored column entitled “Soft Skills Budget” with the help of conditional logic in the script. Likewise, any courses designated as indeed mutuatlized (by more than one program) were added together in order to not count the courses twice in terms of budgeting. The said level of segmentation used to be done manually, which resulted in missing details and errors in reports to be presented to the finance department.

On a planning level, the ability of the tool to facilitate scenario simulation was one of the most powerful features to be introduced. The stocked template enabled the personnel to easily make alterations of parameters-pay rates, number of hours or course type into the template and see, in real time, the impact of changes on the total spending. This functionality is useful during budget committee meetings. Administrators could run the effect of retaining a permanent professor and sticking with adjunct faculty or they could play with the effect of merging two courses under a mutualized system. This integration functionality allowed more informed and strategic communication that converted the budget to a dynamic line of planning rather than a static spreadsheet.

The graphic interface of the tool was important too in engaging the stakeholders. The use of different row colors, bold headings in columns and so on made the results easier to interpret by such users. The data was organized in a logical way an the data summary was very easy to identify among the raw data. In older models of budgeting tools, one would often read incorrect totals in the wrong accounting or overpopulated sheets. The new layout was quite basic, but it was consistent with simple principles of

the visual hierarchy and cognitive ergonomics, which made it clearer and more accurate.

Technically, the instrument also boosted data validation and error manipulation. As an example, when values of teaching hours or dollars in the budget were not entered, or entered incorrectly in format, script responded by abusing those cells, or avoiding such in calculation. Such strength was needed when we had to work with real world data sources which frequently had missing fields, different capitalization or incorrect labels. Moreover, VBA usage of dictionaries offered memory-mapped script execution of aggregate values per program, and the script simply ran fast even when there were several hundreds of records.

At a strategic scale, the budget tool gave the institution a higher financial guiding light and responsibility. Academic leaders with real-time access to budget forecasts would also be able to make better staffing decisions, course offerings and give finance more accurate projections. Audit preparedness was also enhanced as the tool provided traceable and transparent budgetary preparation process complete with verifiable source statement. After all, the budget automation tool not only facilitated efficiency, but also took the quality of financial governance of the school to another level.

Chapter 9: Findings and Data Analysis

9.1 Overview of Analytical Metrics and Purpose

The case of Business Process Automation (BPA) tools implementation into ESLSCA business School Paris was based on three specific administrative problems which were namely manual workload planning, faculty contract production and budget forecasting. As much as the formation of these tools and their delivery was strategic, Agile, and methodological, their usefulness

should be finally determined quantitatively and subjectively. This chapter entails findings of an extensive data analysis carried out to determine the success of the automation systems. It combines not only quantitative measures like time saved, rates of errors and effectiveness of the process, but also the qualitative perspective gathered through interviews, customer feedback, and sprint retrospectives. This is meant to determine whether the BPA initiative met its goals or not and what lessons can be learned as the basis of future projects in the institution.

The results gathered in the form of performance tracking, interviewing of stakeholders, and the observational logs are measured along three fundamental levels, which are efficiency, accuracy, and user experience. These dimensions are fitted to research questions and hypotheses mentioned by the beginning of this thesis. The results evidence not just technical success but also organizational learning, and change of culture.

9.2 Efficiency Gains Measurement

The main purpose of one of the tasks done with the BPA tools was to save time that would be demanded to accomplish the most important academic procedures. This productivity was monitored both by measuring the timeline of the processes carried completion prior to automation and with the help of sprint log regimes.

In the case of workload planning, before the implementation of automation, academic coordinators were by average spending 12 to 15 hours per semester on consolidation of data, verification of calculations and creation of the reports. With the implementation of the Workload Planning Automation Tool the time needed was reduced to around 3.5 hours and that translates into a 70-75 percent decrease. These increases were equal in the both the bachelor and the MBA programs. Notably, the time makeover was not only

about making calculations quicker, but also about avoiding cross-checking, avoiding email clarification and making reports more effortless.

Where it involved contract generation, the manual process used to consume anything between 15 to 30 minutes per instructor especially when the instructor taught in more than one program. Using the new Contract Automation System, contracts were produced at an average of less than 3 minutes on average. In the case of 30 professors, total processing time was reduced to less than 2 hours, that is, 10-12 hours vs less than 2 hours. These savings were cumulative in peak administration periods and the staff was able to concentrate on review and validation instead of re-entering of data.

There were significant time savings as well created by the Budget Forecasting Tool. A lot has changed, as before compiling a forecast budget it was necessary to drag information on multiple program sheets and add costs manually. This consumed 4- 6 hours per semester. Once the job was automated, it took less than 1 hour to finish the same work and many scenarios could be modeled in case the need arose.

All in all, the average time savings with all three tools was more than 70 percent, which was much beyond expectations. The improvement in this efficiency was not only proved to be significant; they felt significant especially when there were peak moments in the institution such as during semester initiation or organizing accreditation audit. Other than the time savings the reliability and repeatability of all automated procedures was one of the greatest values of the efficiency gains. In manual operations employees were regularly having to reinvent the wheel each semester, reopening the old files, (and) amending templates, (and) re-validating known structures. Automation led to standardization of such processes into standard workflow and subsequently led to a reduction in the cognitive and procedural burden on staff. An example; instead of re computing teaching hours, or finding the previous term information, the user just updated a data source

and ran the macro, to come up with a formatted to review data summary. This standardization of the regular work meant better continuity of the results and more confidence in the process.

Also, the analysis of the sprint logs also showed that the user independence was increasing gradually. However, in the initial versions, users used to need clarification or imminent action by the developer. However, by the third sprint, the volume of the support questions was more than 60% lower, and it showed that the users did not just become faster with carrying out their tasks but less dependent upon additional help. This reduced amount of support demand can be seen as a second level of efficiency, since the tools eliminated dependencies of the operations and enabled the staff to control their own processes.

The other huge advantage was the scale and variability capability. In the pre-automation era, a modest increment in instructor volume, or program complexity would result in an exponential task time, in response. In comparison, the automated tools were planned to be able to scale with little extra resources. Let us assume that a new program or instructor needed to be added to the workload file; there was no need to make any structural changes, one would just update the input sheet and the script would adapt to it. This flexibility enabled the institution to react faster to increased programs or changes in the curriculum without putting further pressure on the administration.

Lastly, these efficiency gains generated good ripple effects on the institutional quality assurance. Quicker and precise workload reporting would have led to an earlier detection and correction of discrepancies in the cycle lowering the possibilities of breaching contracts or accreditation compliance. Academic teams have a lot more time and can thus concentrate on planning ahead of time, curriculum development, and interdepartmental organization. By doing so, the operation efficiency was developed beyond the operational

performance and it led toward the strategic nimbleness of the academic administration.

9.3 More mistakes and redos minimize

The second success measure was the reduction of errors. The errors in workload estimates, contract specifications or cost spreadsheets may have a reputation, legal and financial cost. Thus, minimizing the number of such mistakes was an essential goal.

The error logs in the past semesters in the course of workload planning showed the most frequent problems: an instructor incorrectly scheduled between three schedules, or there are miscalculated hours, or because courses are mutualized, they are counted twice. Before automation, it was identified that about 15 20 percent of program files had such errors. Following the workload tool adoption, these errors fell below 5 percent, majority being based on making wrong inputs into the tool and not in the functionality of the tool. Notably, the already curbed in validations and the dropdown input in the tool helped in avoiding formatting and spelling inconsistencies which in preset circumstances used to hamper the data amassment.

In the case of contracts, these problems used to occur before automation when people got wrong names, inaccurate hourly rates, and assignments. As the semester before the implementation of the tool, it was required to correct and re-issue at least 4 out of 30 contracts of the semester. The rate of error reduced to practically zero, and the only slight problem that was encountered after futurization was a conflict in name format that was swiftly resolved by adding better string management to the VBA code.

There was also an increase in reliability in the budget projections. Some of the common problems that were associated with manual aggregation were

the misclassification of the type of teaching (e.g. soft skills as being the standard courses) and inaccuracy because of the copy-paste errors in the total costs. Such discrepancy was reduced by 90 percent as a result of post-automation analysis. As the formulas could not be tampered with, and the dictionaries added totals automatically, the likelihood of having miscalculations caused by a human being was quite close to zero.

To conclude, automation did not only speed work up, but also made it significantly more accurate, decreasing the necessity of repeating the work and making the results more trustful to both the personnel and the management.

9.4 Acceptance and hence User Experience

The adoption of technology is not always a technical problem instead it is a human issue. The effectiveness of any BPA program relies on the acceptance, satisfaction and trust of the user. In order to evaluate this, qualitative data was received in interviews, sprint retrospectives and post-deployment surveys.

Some initial resistance was identified though mostly by the staff that was used to manual methods. Other users were afraid that automation would make processes less flexible or involving black-boxes which they can neither comprehend nor alter. In order to counter this, training was conducted, the walkthroughs were given and the tools were created based on familiar interfaces (Excel and Word). This reduced the learning curve and performed more experiments.

Survey after or at post-deployment indicated high rates of satisfaction:

A full 100 percent of the respondents considered the tools to be either very useful or useful.

Only 87 percent replied they would not like to go back to the manual system.

- 93 percent of the participants noted how the tools simplified their work and alleviated burden during the busiest times.

Insurance policyholders particularly liked the drop-down based input of data, automatic report creation and error correction functions. Other ones indicated cosmetic changes; better looking visuals or more obvious alerts, which came in the later version after iteration. As remarked by one of the program managers: This is the first time we have had a tool that functions as we do--not the reverse."

These tools also posed a psychological effect I.e. they further strengthened the feeling of modernizing the department as well as making the department more professional. The tools elevated the morale and in turn promoted more data-oriented thinking by enabling employees to deliver high-quality products at a high speed.

9.5 Learning in the Organization and Cultural Shift

In addition to direct effects of the tools there was also an overall influence on the culture of the academic operations team brought about by the development and implementation of the tools. The Agile practices, in particular, sprint reviews, backlog planning, and user stories, imposed a different pattern of coordination and progressive refinement. Employees were made more OK with the notion of prototyping, feedback, and modifying their tools to suit changing requirements.

This was in contrast to the old culture where templates ruled and one size fit all documents were the order of the day. Rather, the BPA initiative promoted local solutions according to the real workflows. An example has been the mutualization tracker in the budget tool; this was a suggestion given by one

of the program assistants during Sprint 2. Its inclusion demonstrated the value of the user inputs and that of buy in as they were put into execution.

Also, the program enhanced visibility across the departments. Where the planning of workload, drawing of contracts, and budgeting used to be practiced in silos, the new tools were built around a common data base that enhanced the level of consistency and communication among the HR, Finance, and Academics units.

A platform of institutional memory was also open using the tools. Unlike the manual systems that were dependent on knowledge of individual members of the staff, logic and workflows were embedded in the form of reusable scripts and templates in the automated systems. This mitigated critical on dependency and facilitated hiring of new employees.

9.6 Key Findings in Summary

It is possible to conclude based on the gathered information throughout the process of this work that there are a number of obvious conclusions:

Efficiency: Instead of taking 70% to 85% of their required timelines to complete the tasks, the administrative time was saved to do more meaningful tasks.

- Accuracy: The error rates will be reduced throughout the three processes by 80 to 95 percent, and compliance rates and rework will be reduced.

- User Experience: When little training was given and surveys conducted to measure user satisfaction, the rates were high and the adoption was quick.

- Learning: Agile practices enhanced cooperation, reiteration, and a less-aged methodology of the way processes were created.

- Strategic Value: The tools offered a new base of improved auditing, decision-making, and increased digital transformation in future.

All these findings corroborate the hypotheses that were put forward in the beginning of this thesis. Specifically:

- The swift user-centered method of development process provides strong support to H1 (Agile PM enhances BPA delivery).

The empirical measurements and the testimony of staff members confirm H2 (BPA decreases the workload and enhances output).

- H3 (The involvement of stakeholders in terms of adoption is approved through interviews and sprint logs).

- H4 (The scale of BPA by low-code is achieved because of the adaptability and effectivity of tools notwithstanding the absence of a significant investment in IT) is proved by the tools scalability and influence without significant IT investments.

To enhance the interpretation of the opinions of the users, it was offered to code the qualitative interviews more in depth using an inductive approach. The categories that emerged were grouped into four that included usability, trust, efficiency and empowerment. Under the attribute of usability, respondents continued to note that the common Excel interface made learning easy since they were not anxious of using a new system. Even those whose technical skills were not high were quite comfortable with dropdown menus, autofilled tables, and color-coded areas. An academic coordinator has commented, I did not need to learn a new program I simply opened the file and went by colors. This confirms literature on the user-

centric design where familiarity and easily understandable structure apply in the non-technical situations when it comes to the level of adoption of the design.

The theme of trust was insightful indeed. Among the personnel, several people claimed that previously, they did not feel confident about the data in reports prepared manually, and they also had to make sure in the figures being afraid, because of possible errors. This behavior was altered after the implementation. Users mentioned that they had got used to believing in numbers now, i.e., they believed in numbers they had not created individually. The latter indicates an institutional gain of extreme importance: the creation of domestic trust by means of transparency and repeatability. The idea that the calculation was done using formula which was entirely based on source planning sources gave the user the confidence that the calculation on the system could be used even across the department.

The tools were seen to not only cut on the time of individual tasks but also the inter-team delays when considered as far as the efficiency is concerned. As an example, budget sheets used to be prepared several times and corrected as many times before it could be sent to finance once it had been produced. This spill reverted throughout workflows, as it condensed the whole scheme of planning and reporting. The workload tool especially assisted academic managers to spot problems before they backup. One of the staff members complained that they would only find out about overloads when faculty began complaining. Now we can see now they are approaching. This is a proactive skill that meant that less of the late stage reconfigurations occurred, and roll out of semesters was smoothly performed.

The unanticipated theme that came out was that of empowerment. In addition to the technical improvement, a large number of users claimed that

they felt more involved in institutional decisions because of access to real-time tools. They were no longer expected to query IT or finance, to verify figures. They would rather model, check and discuss data instead. This was a way of creating the sense of agency and even ownership which is of particular importance to mid-level administrators thus playing an intermediary role between policy and practice. Even the fact that empowered users are more inclined to working with data, proposing improvements, and contributing to innovation is a long-lasting effect of automation, not to mention the technical advantages.

The other lesson was through longitudinal analysis of three sprint cycles of usage patterns. The number of tool users was also growing positively, and increased by more than 30 per cent between the first and the third sprint according to the calculation, and there was even more suggestions of improvement internally as time moved on. This does not only mean acceptance but active participation, which is a characteristic of effective change management. During the last sprint, employees were offering more applications where automation could be applied, like the faculty evaluation form or the ability to have a single record of the attendance information of the students.

All these results create comprehensive image of success. The BPA tools covered not only the issues of operational inefficiencies but also led to the improvement of workplace culture and increased professional trust and showed that low-code, high-engagement tools can be a game changer in academia. They also emphasized the idea that data-driven insights when openly shared may result in better collaboration and accountability between the departments. All these findings indicate the supporting data to the hypotheses presented earlier in this thesis.

Table 7. Key Performance Indicators and Thresholds

				Actual

Key Performance Indicator (KPI)	Target Threshold	Actual Outcome Achieved	Assessment
Contract Generation Error Rate	≤ 5%	Near 0%	Fully achieved
Budget Forecast Accuracy	≥ 90% consistency	~95–98% consistency	Fully achieved
User Satisfaction (Survey Positive Rating)	≥ 80%	93% "Very Satisfied"	Exceeded expectations
Adoption Rate (Number of Departments Using Tool)	3 pilot areas	3 active + 2 requesting rollout	Adoption beyond scope
Feature Usability (Bug Reports per Semester)	≤ 3	1 minor bug per tool	Fully acceptable

Chapter 10 Conclusions and Recommendations

10.1 Research Intent and Closing Themes Synthesis

This is the last chapter of the thesis and it brings out a conclusion to the research and realization process to be carried out. It is intended to consider the findings, refer them to the goals and research questions, and make some practical and strategic suggestions to ESLSCA Business School Paris and other institutions of the kind. The theoretical and managerial implications of the project, it limits and possible future research directions are also discussed in this last chapter. The fact that Business Process Automation (BPA) was successfully implemented by using Agile Project Management (Agile PM) proved that although the project was held in the topic of low-resource decentralized academic settings, the effect could still be measured with the aid of suitable methodology, tools, as well as stakeholder involvement.

10.2 Chapters Thesis statement

The main concept of this thesis was the actual adoption of BPA in ESLSCA Business School Paris and the employment of Agile PM as the delivery mechanism. The study determined three particular issues in academic management, faculty workload schedule, contract development, and budget estimation. These procedures were characterised by unnecessary redundancy, inefficiency, being not integrated and the high rate of human error. The project customized automation tools, on the one hand utilizing Microsoft VBA Office, based on the theoretical approach of the Business Process Management that helps analyze these challenges, with references to the theory of change management and Agile philosophy.

All the solutions, be it working on workload, contracts, or budgeting, were developed taking an iterative approach with an ongoing user feedback, performing sprinting, backlog refinement and testing. The instruments were not only meant to automate redundant processes, but also ensured incorporation of institutional reasoning, ensure data uniformity and minimized dependence on undocumented manual procedures. As the project allowed taking into account the changes in operation variances, such as the efficiency of operations, accuracy and user satisfaction, there was evidence of extensive improvement in all the above factors. It brought about changes in the thinking process at the organization level, i.e. reactivity in completing tasks to pro-activity in designing processes.

10.3 Major Research Results

The project reaffirmed the four hypotheses written in Chapter 3. First, Agile PM implemented the ability to deliver BPA tools more quickly and to a higher degree of adaptivity. The sprint based framework allowed a strict vision and pace, whereas reviews and retrospectives helped us keep in line with the expectations of the users. Second, the administrative workload was

decreased substantially, as time spending on any piece of work was decreased by 7075, up to 85%. Third, early and continual inclusion of stakeholders resulted in increased acceptance, better-fitting feature catalogs as well as easier migrations. Fourth, tools like VBA were adequate enough in terms of the core automation requirements in cases where complex IT infrastructure is not present.

Moreover, the study revealed that BPA has more to offer other than enhancing operational improvement. The tools were a vehicle to institutional learning by institutionalizing best practices in repeatable machine systems, coordinating departmental cross-agency efforts, and assisting data-driven choice. Building them also enhanced communication among people involved in academia, HR, and finance, so the inseparability of their roles is highlighted.

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At the management level, the project demonstrates the way academic institutions are able to enhance their internal performance without using costly enterprise systems. Usually, the obstacle to process improvement is not the technological one but methodological and cultural. With the help of Agile and low-code, organizations can embark on journey to digital transformation on a step-by-step basis, with co-design and iteration being conducted by local teams. This saves not only money but makes it improve ownership, and sustainability.

The BPA tools enhance the resilience and expandability of the operations of ESLSCA strategically. The growing presence of the school in providing a larger repertoire of program offers and increase in faculty implies the need of the school to expand its capacity to plan and budget which the use of automated planning and budgeting tools can enable. The tools also enhance

institutional governance thus allowing easier audit trails, efficient distribution of resources and forecasting.

Moreover, the lesson learned in the course of this project offers a guideline of what to expect in future digital projects in this school. The project will provide the foundation to expand digital transformation, as the success and accessibility of automation will show the potential of a central hub of academic data, unified scheduling systems, and e-signatures workflows.

10.5 ESLSCA recommendations

The following recommendations based on results of this project are offered to ESLSCA Business School Paris:

1. Make Agile Practices Institutional: The results of Agile in practice were just as successful in software development, as they were in project management and change implementation. The school can think of the possibility of training the administrative staff keeping basic Agile to help future innovation projects.

2. Apply BPA to Other Applications: Based on the success of BPA in workload, contract and budgeting applications it would be natural to extend the similar applications in faculty evaluations, examination scheduling, student attendance management, and accreditation tracking.

3. Phasing in Central Database: Although the Excel-based solutions worked well in the introductory phase, there should be plans in the later iterations to implement the tools into the databases (e.g., Microsoft Access or SharePoint) so that there is increased collaboration and safety.

4. Training and Documentation: There must be documentation of each tool including a user manual, training applications and support. This will

make it highly usable in long-term and will depend less on the original developer.

5. Select a Digital Process Champion: A worker or group must be assigned to be on the lookout for additional automation opportunities, to support the current tools, and act as a communication medium between departments.

6. Monitor and Evaluate: Frequent performance reviews must be carried out on the basis of tool utilization, user satisfaction and possible enhancements. The use of key performance indicators (KPIs) can revolve around the error rates, processing time, and staff feedback scores.

10.6 Limitations of research

Although the project was successful in attaining the goals, a number of constraints have to be considered. First, it is a single-institution case study and the results therefore are not generalizable. The context of the project depends on organizational structure, culture, and digital infrastructure provided by ESLSCA and thus the outcomes of the project can change according to the scholarly setting. Second, the last study was confined to three main processes. Other regions can also have a different challenge with a different solution.

Third, VBA was an effective technology, but it also should be noted that it had limitations, such as being less scalable, single-user, and lacking maintenance over time. Additional technical know-how and institutional investment would be necessary in future transitions to the use of web-based or database-driven platforms. Lastly, the duration of the internship only meant just three springs per tool. Although it was enough to deliver MVP, some features, like analytics dashboards, notifications, or multi-lingual support, remain to be without implementation.

Howell should be applauded, in spite of the limitations of the study, to provide an example of how applied research in the field of business administration can spur effective institutional change.

10.7 Future Research Instructions

The success of this project paves the way to a number of research possibilities in future:

Comparative Studies: Following the same model in different schools or colleges, probably, will assist in verifying the model generalizability and discovering new variables that may affect the success of BPA.

- Longitudinal Impact: The performance of the tools and their institutional impact during several semesters would give a far better idea of the overall importance and sustainability of the tools.

- Technology Evolution: Investigating the shift away of VBA to other platforms (e.g., PowerApps, Python, or no-code tool) may provide an idea of how institutions keep transforming their strategy of automation.

- Resistance and User Behavior: Understanding psychological and cultural forces that impact the adoption of BPA may further our effective insights into the change mechanisms within an educational context.

- Cost-Benefit analysis: The objective to compute the monetary benefits of using BPA in administrative settings may contribute to high-level decision-making.

10.8 Closing Impression

Fundamentally, this thesis proves that judicious application of basic technologies governed by ideative methodology and user input may be truly beneficial to an organization. This project proves that in a world where many

of the lines between digital transformation and expensive ERP systems and disruptive overhauls are blurred, progress can also begin small, through the right attitude and the right tools.

The three BPA instruments that were created during this internship and each covering one essential administrative process produced calculable efficacy, precision, and client contentment. More to the point, they brought about a greater trend toward evidence-based culture and process ownership in ESLSCA. Not only did the project lead to technical innovation, but it also promoted cultural development by instilling the Agile concepts and co-creation of solutions by the project and the people using them.

Finally, this thesis should once again remind on the worth of applied research based on practice, especially in educational management where the issues are on stake not only in terms of its performance but also to academic delivery as well as experience of staff and students. In the case of ESLSCA Business School Paris, this venture will be a small yet significant effort in the path to becoming both a smarter and more flexible school, and to the researcher, it is a living testament to the ways of management science and application working together.

This research not only addresses the operational objectives of the project, but it also lies on the value of the agility aspect as a mindset and not merely a methodology. Embracing the philosophy of Agile Project Management, the institution showed how to solve complex administrative issues through flexibility, quick iteration, and constant learning. This is particularly significant in an educational setting, where a decision-making process has to deal with emerging policies, stakeholder requirements, and time constraints. Agile enabled a quicker matching of objectives set inside the institutions with the reality at the local levels, but offered a controlled yet flexible technical growth environment.

Another strategic lesson is that the pursuit of digital transformation does not necessarily involve enterprise-grade tools. The effective implementation of BPA systems that are developed using VBA breaks a myth that academic administration innovation requires expensive and large-scale systems. Rather, this example shows that organizations can create significant values through optimization of sources already available but carrying it out intelligently, process-sensitively, and with user action. The adaptation latitude afforded by VBA combined with stakeholder feedback systems generated fit-to-purpose systems that were culture-sensitive to the environment to which they were being applied.

The other valuable lesson learned in the process of the project encompasses transfer of knowledge and internal capacity building. BPA projects can falter often due to lack of sustenance of technical logic since the same is only with the handful IT department or consultant. In the current study, however, attempts were made to make the code documented, the workflows descriptions and staff members trained to modify the tools themselves. Successful implementation of the dropdowns CMS, through enabling staff to amend dropdowns, change templates or read error logs themselves, not only created a technical solution that was easier to use but that also created and environment of learning and practice that could sustain itself. It is imperative in promoting survivability particularly in an organization that has large staff turnover.

In the future, the implemented project tools and the results could be used as a roadmap of implementing automation in other departments. Most of the specific features, including data validation, mutualization tracking or embedded summaries, may be modularised and re-used to other applications. This could be automating internship record-keeping, course scheduling, student assignments entries or the digital signature procedures. Not only would these extensions enhance administrative coherence, but also

enlarge the competitive advantage of the school, as far as agility and responsiveness of operations are concerned.

On a larger scale, the thesis shall add to an emerging popularisation of administrative creativity as an element of an institutional excellence. Although curricular or pedagogic transformation in many academic institutions takes center stage, the performance and flexibility of support systems are very critical too. Administrative excellence is a weapon of strategic positioning particularly in a day and age of hybrid higher education, cross-border campuses, and mounting accreditation requirements. This project can be considered a point of reference in showing other institutions how they can modernize without competing the core values and overstretching their budget by implementing a successful model of BPA implementation in a bottom to the top manner.

Conclusively, the study confirms once again that the key indicator of change is not technology but people. The key to the success of the BPA project was the approach of participatory design, context awareness, and adoption of the real-life workflows of a user. This is the strategy of considerate strategy, trust of stakeholders, and delivery cycle that has eventually brought in the long-range value of ESLSCA Business School Paris and made the institution fit to further growth in the academic world that is becoming very digital.

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Appendix